2437.

SUPREME COURT OF THE UNITED STATES.

No. 209.

JACOB P. WILSON, APPELLANT,

vs.

DANIEL BARNUM.

APPEAL FROM THE CIRCUIT COURT U. S. FOR THE EASTERN DISTRICT OF PENNSYLVANIA.

INDEX.

	Original.	Print.
Bill	2	3
Decree granting injunction	18	17
Answer of respondent	19	17
Replication	43	29
Motion to dissolve injunction	44	29
Feigned issue, (order for)	45	29
Amendment of feigned issue	46	30
Names of sureties approved	47	30
Second amendment of issue	48	30
Bond of Wilson et al. to Barnum	49	31
Depositions taken before Judge Lawrence	55	34
Deposition of W. P. N. Fitzgerald	72	42
Commission to Washington, D. C.	79	45
Commission to New Orleans, La.	110	62
Deposition of George H. White	141	85
Deposition of Thomas Blanchard	147	88
Deposition of W. S. Pendleton	160	94
Depositions taken before Commissioner Newton	168	98
Depositions taken before Judge Parmelee	215	120
Exhibits	296	152
Deposition of W. W. Woodworth	300	158
Jury	309	161
Testimony taken on the trial	310	162
Testimony given by defendant on the trial	369	189

GIDEON, Printer.

	Original.	Print.
Judge Grier's charge to the jury	391	198
Jury discharged without a verdict	409	206
Affidavit of defendant	410	206
Agreement for hearing before Supreme Court	414	208
Statement of facts	415	208
Point of division of the judges	420	210
Clerk's certificate	421	211

Pleas before the honorable the judges of the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, of April session, 1849. No. 6.

It is thus contained:

Be it remembered, that heretofore, to wit, on the fifth day of April, in the year of our Lord one thousand eight hundred and forty-nine, Jacob P. Wilson, by his attorney, Sidney V. Smith, esquire, filed of record in the said court his bill of complaint against Daniel Barnum, in the words and of the tenor following, to wit:

Circuit court of the United States, for the eastern district of Pennsylvania.

JACOB P. WILSON }
vs. } In equity.
DANIEL BARNUM. }

To the honorable the judges of the circuit court of the United States, for the district of

Parties.

Jacob J. Wilson, of Philadelphia, in the State of Pennsylvania, and a citizen of said State, brings this bill against Daniel Barnum, a citizen of the State of New York, but now residing in the said city of Philadelphia, in the State of Pennsylvania, and thereupon your orator complains and says, that on or about the 4th day of December, 1828, one Wm. Woodworth, then in full life, but since deceased, was the inventor of a certain improvement or machine for planing, tongueing, and grooving boards and plank, and other material, and so being, made application to the proper department of the Government of the United States for a patent, in accordance with the then existing laws of Congress; and having duly complied in all respects with the conditions and requisitions of said laws, on the 27th day of December, 1828, letters patent of the United States, signed, sealed, and executed in due form of law, were issued to the said William Woodworth, in substance and effect as follows:

Application for original patent.

The United States Patent office.

To all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy of letters patent granted to William Woodworth, for an improvement in the method of planing, tongueing, grooving, and cutting into mouldings, or either, plank, boards, or any other material, and for reducing the same to an equal width and thickness, &c., &c., dated the 27th day of December, 1828, recorded anew on the 22d day of August, 1842, and extended for seven years on the 16th day of November, 1842.

In testimony whereof I, Henry L. Ellsworth, Commissioner of Patents, have caused the seal of the Patent office to be hereunto affixed, this 23d day of January, A. D. 1843, and of the independence of the United States the sixty-seventh.

[SEAL.]

(Signed) H. L. ELLSWORTH.

The United States of America.

To all to whom these letters patent shall come:

Whereas William Woodworth, a citizen of the United States, hath alleged that he has invented a new and useful improvement in the method of planing, tongueing, grooving, and cutting into mouldings, or either, plank, boards, or any other material, and for reducing the same to an equal width and thickness, and also for facing and dressing brick, and cutting mouldings on, or facing metallic, mineral, orother substances, which improvements, he states, have not been known or used before his application; hath made oath that he does verily believe that he is the true inventor or discoverer of the said improvement; hath paid into the treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvements, and praying that a patent may be granted for that purpose: These are therefore to grant, according to law, to the said William Woodworth, his heirs, administrators, or assigns, for the term of fourteen years from the 27th of December, 1828, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said William Woodworth himself, in the schedule hereto annexed, and is made a part of these presents.

Original Letters.

In testimony whereof I have caused these letters to be made patent, and the seal of the United States to be hereunto annexed.

[SEAL.]

Given under my hand, at the city of Washington, this twenty-seventh day of December, in the year of our Lord one thousand eight hundred and twenty-eight, and of the independence of the United States of America the fifty-third.

(Signed) J. Q. ADAMS.

By the President:

(Signed) H. CLAY, *Secretary of State.*

CITY OF WASHINGTON, *to wit:*

I do hereby certify, that the foregoing letters patent were delivered to me on the twenty-seventh day of December, in the year of our Lord one thousand eight hundred and twenty-eight, to be examined; that I have examined the same, and find them conformable to law; and I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit, on the twenty-seventh day of December, in the year aforesaid.

(Signed) WM. WIRT,
Attorney General of the U. S.

(And for a full and accurate description of the said invention, your orator will hereinafter set forth the language of the specification, and affix thereto the figures and representations of said machine, as the same is annexed to the renewed letters patent issued thereon on the eighth day of July, A. D. 1845, upon the application of William W Woodworth, administrator of the said William Woodworth, and upon a surrender and cancellation of said original letters for an imperfect or defective specification.)

Decease of Patentee.

And your orator further shews unto your honors, that afterwards, on or about the ninth day of February, A. D. 1839, the said William Woodworth, deceased at the city of New York, the place of his then residence; and thereupon afterwards, on or about the 14th day of February, A. D. 1839, administration of the estate of the said William Woodworth was duly granted by the surrogate of the county of New York, unto William W. Woodworth, son and one of the heirs of the said William Woodworth, and the said William W. Woodworth thereupon entered upon the duties of the said trust.

Extension of the term.

Nov. 16, 1842, board certified, &c.

And afterwards, on or about the twentieth day of July, in the year of our Lord eighteen hundred and forty-two, the said William W. Woodworth, in his said capacity, made application in writing to the Commissioner of Patents of the United States, setting forth that he desired an extension of the said letters patent and the grounds thereof; and having paid the sum of forty dollars to the credit of the treasury of the United States, and the said Commissioner having caused public notice of such application to be given according to law, and the Secretary of State, and the Commissioner of Patents, and the Solicitor of the Treasury of the United States, having met, as the board designated by law for such purpose, on the first day of September, in the year last aforesaid, at the Patent office in Washington, being the time and place appointed for such meeting in the said public notice, did then and there proceed to hear and consider the said application, and on divers days and times to which such hearing and consideration were duly continued by adjournment, did hear and consider the same, and such proceedings were then and there had, that afterward, on or about the sixteenth day of November, in the year last aforesaid, the said board did adjudge and certify in writing, that, upon hearing of the said matter, it appeared to their full and entire satisfaction, having due regard to the public interest therein, that it is just and proper that the term of the said letters patent should be extended, by reason that the patentee, without neglect on his part, had failed to obtain, from the use and sale of his invention, a reasonable remuneration for the time, ingenuity, and expense bestowed upon the same, and the introduction thereof into use; which said certificate having been duly signed by all the members of the said board, the Commissioner of Patents did thereupon, according to law, renew and extend the said patent by making a certificate of such extension thereon for the term of seven years, from and after the expiration of the said term of fourteen years, for which the said patent was originally granted; which last mentioned certificate, together with the said certificate of the said board, having been been duly entered of record, your orators crave leave to refer to duly certified copies thereof.

Grant to Wilson.

And your orator further shows unto your honors, that afterwards, on or about the eleventh day of January, in the year of our Lord one thousand eight hundred and forty-four, your orator, William W. Woodworth, by a deed of that date, which has been duly recorded in the Patent office at Washington, did grant, assign, and convey to James G. Wilson all the right, title, and interest which your orator Woodworth, in his said capacity, then had in and to the said exclusive privileges, saving and excepting only the right to make, use, and vend the said patented machines in the State of Vermont.

And your orator further states unto your honors, that the rights and interests in and to said improvement and invention and the use of the same of your orator is of the extent, and was acquired at the time and in the manner following, to wit:

November 29, 1842. William W. Woodworth, administrator, granted to Charles D. Gould a license to construct, use, and vend to others, said patent within the county of Philadelphia. November 21, 1843. Charles D. Gould granted to James G. Wilson a license to construct, use, and vend to others, said patent within the county of Philadelphia; and William W. Woodworth, administrator, having surrendered the patent, and received the legal title in or about the month of August, 1846, granted the same to said James G. Wilson, the precise date of which grant your orator cannot state, for the city and county of Philadelphia.

Titles of complainants.

On or about the 30th of January, 1844, James G. Wilson granted to Barzillai C. Smith, an undivided equal half part of the exclusive right to said patent, within the county of Philadelphia.

July 29th, 1848. Barzillai C. Smith granted to said James G. Wilson the aforesaid undivided equal half part of the said patent.

September 1, 1846. James G. Wilson granted to your orator a right to construct, use, and vend to others, within that part of the county of Philadelphia, bounded by the Delaware river on the east, Broad street on the west, and Market street on the north, four machines of the said patent right, for and during the said term extended, from and after the said 27th December, 1849, and for whatever right until to the 27th Dec., 1849, the said Wilson may have had.

January 10, 1849. James G. Wilson granted to your orator a right to said patent, within the district aforesaid, until the 27th December, 1849.

All which were duly recorded in the Patent office of the United States, as will more fully appear by a copy of the record, duly authenticated, and ready to be produced in court, as your honors may require.

And your orator do further state and shew to your honors, that the great utility and importance of this invention may the more fully appear, and the consequent rights and interests of the said inventor and those who, by inheritance or assignment, have acquired titles under him, that, on the 26th day of February, A. D. 1845, the Congress of the United States passed an act, which was approved by the President, of which the following is a true copy, as will more fully appear by the records of the Patent office of the 3d of March, A. D. 1845, viz., An act to extend a patent heretofore granted to William Woodworth.

Congressional extension.

PATENT OFFICE, *March* 3, 1845.

Whereas the Congress of the United States have passed an act, of which the following is a true copy, viz:

An act to extend a patent heretofore granted to William Woodworth.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the patents granted to William Woodworth, on the twenty-seventh day of December, in the year one thousand eight hundred and twenty-eight, for his improvement in the method of planing, tongueing, grooving, and cutting into mouldings, or either, plank, boards, or any other material, and for reducing the same to an equal width and thickness, and also for facing and dressing brick and cutting mouldings on, and facing several other substances, a description of which is given in a schedule annexed to the letters patent granted as aforesaid, be, and the same is hereby, extended for the term of seven years, from and after the twenty-seventh day of December, in the year one thousand eight hundred and forty-nine, and the Commissioner of Patents is hereby directed to make a certificate of such extension in the name of the administrator of the said William Woodworth, and to append an authenticated copy thereof to the original letters patent, whenever the same shall be requested by the said administrator or his assigns.

Approved Feb. 26, 1845.

A true copy from the roll in this office.

R. K. CRALLE, *Chief Clerk*.

DEPARTMENT OF STATE, *March* 3, 1845.

Whereupon, in conformity with the requisition in said act of Congress set forth, the Commissioner of Patents, on the 3d day of March, A. D. 1845, affixed to said letters patent his certificate, in the words following, to wit:

Commissioner's certificate of extension.

In conformity, therefore, with the directions in the said act contained, I, Henry L. Ellsworth, Commissioner of Patents, do hereby certify, that the patent therein described, is by the said act extended to William W. Woodworth, administrator of said William Woodworth, for the term of seven years from and after the twenty-seventh day of December, in the year one thousand eight hundred and forty-nine; and this certificate of such extension is made on the original letters patent, on the application of William W. Woodworth, the administrator of the said William Woodworth.

In testimony whereof, I have caused the seal of the Patent office to be hereunto affixed, this 3d day of March, 1845.

[SEAL.]
HENRY L. ELLSWORTH,
Commissioner of Patents.

And your orator do further state and show to your honors, that the said William W. Woodworth, as administrator aforesaid, on the 8th day of July, A. D. 1845, did make a formal surrender of said original letters, in conformity with the laws provided in such cases, for the purpose of obtaining a renewal of the same, upon a specification accompanied with drawings and figures of the said machine, describing the said invention and pointing out in what it consists, in more full, clear, and exact terms, than was done in the original specification.

Surrender and renewal.

Whereupon, on said 8th day of July, A. D. 1845, a renewal of said letters patent was made and granted from the Patent office of the United States, in due form of law, upon said amended specification, figures and drawings; and the said amended specification, with the explanatory drawings, and the said letters patent are, as will appear by the records of the Patent office, duly authenticated copies of which shall be produced as your honors may direct, in the words and figures following, to wit:

The schedule referred to in these letters patent and making part of the same.

To all whom it may concern: Be it known, that the following is a full, clear, and exact description of the method of planing, tongueing and grooving plank or boards, invented by William Woodworth, deceased, and for which letters patent of the United States were granted to him on the 27th day of December, in the year one thousand eight hundred and twenty-eight; the said letters patent having been surrendered for the purpose of describing the same invention, and pointing out in what it consists, in more clear, full, and exact terms, than was done in the original specification.

Amended specification.

The plank or boards, which are to be planed, tongued, or grooved, are first to be reduced to a width by means of circular saws, by reducing wheels, or by any other means. When circular saws are used for this purpose, two such saws should be placed upon the same shaft, on which they are to be capable of adjustment, so that they may be made to stand at any required distance apart:

under these the board or plank is to be forced forward, and brought to the width required; this apparatus and process do not require to be further explained, they being well understood by mechanicians.

When what has been above denominated reducing wheels are used, these are to consist of revolving cutter wheels, which resemble in their construction and action the planing and reducing wheel to be presently described; these are to be made adjustable like the circular saws; but the latter are preferred for this purpose. The plank may be reduced to a width on a separate machine.

When the plank or boards have been thus prepared, (on a separate machine,) they may be placed on or against a suitable carriage resting on a frame or platform, so as to be acted upon by a rotary cutting, or planing and reducing wheel—which wheel may be made to revolve either horizontally or vertically, as may be preferred. The carriage which sustains the plank or board, to be operated upon, may be moved forwards by means of a rack and pinion, by an endless chain or band, by geared friction rollers, or by any of the devices well known to machinists for advancing a carriage or materials to be acted upon in machines for various purposes. The plank or board is to be moved on towards the cutting edges of the cutter or knives, on the planing cylinder, so that its knives or cutters, as they revolve, may meet and cut the plank or board in a direction contrary to that in which it is made to advance; the edges of the cutters are in this method prevented from coming first into contact with its surface, and are made to cut upwards from the reduced part of the plank towards said surface; by which means their edges are protected from injury by gritty matter, and the board or plank is more evenly and better planed than when moved in the reverse direction.

After the board or plank passes the planing cylinder, and as soon or fast as the planing cylinder has done its work on any part of the board or plank, the edges are brought into contact with two revolving cutter wheels, one of which wheels is adapted to the cutting of the groove, and the other to the cutting of the two rebates that form the tongue. When the axis of the planing and reducing wheel stands vertically, the grooving and tongueing wheels are placed one above the other, with the plank edgewise between them. When the axis of the planing wheel stands horizontally, these wheels are on the same horizontal plane with each other standing on perpendicular spindles.

The grooving wheel consists of a circular plate fixed on an axis, and having one, two, three, four or more, cutters, which are to be screwed, bolted, or otherwise attached to it, the edges of which cutters project beyond the periphery of the plate to such distance as is required for the depth of the groove; their thickness may be such as is necessary for its width; they are of course so situated as to cut the groove in the middle of the edge of the board, or as nearly so as may be required. The tongueing wheel is similar in form to the grooving wheel, but it has cutters on each of its sides or otherwise, so formed and arranged as to cut the two rebates which are necessary to the formation of the tongue.

Amended specification.

The grooving and tongueing cutters, at the same time, and by the same operation, reduce the board or plank to an exact width throughout. When the axis of the planing wheel is placed vertically, the knives or cutters may be made to plane two planks at the same time; the planks being in this case moved in contrary directions, and so as to meet the edges of the revolving knives or cutters. When the machine is thus constructed, a second pair of grooving and tongueing wheels may be made to operate in the same way with those above described. A machine to operate upon a single plank or board, and having the axis of the planing wheel placed horizontally, will, however, be more simple and less expensive than that intended to operate on two planks simultaneously.

In the accompanying drawing, Fig. 1 is a perspective representation of the principal operating parts of the machine when arranged and combined for planing, tongueing, and grooving; and when so arranged as to be capable of planing two planks at the same time, the axis of the planing wheel being placed vertically, A. A. is a stout substantial frame of the machine, which may be of wood, or of iron, and may be varied in length, size, and strength, according to the work to be done. B. B. are the heads of the planing cylinder, and C. C. the knives or cutters, which extend from one to the other of said heads, to the peripheries of which they may be attached by means of screws. The knives C. C., with the faces forming a planing angle, may be placed in a line with the axis J. of the cylinder, or they may stand obliquely thereto, as may be preferred; but in the latter case, the edge should form the segment or portion of a helix; *b*. represents a pulley near to the upper end of the axis J.; and I. a pulley or drum, which may be made to revolve by horse, steam, or other motive power, and from which a belt may extend around the pulley *b*, to drive the planing cylinder, and other parts of the machinery; G. is the carriage which is represented as being driven forward by means of a rack and pinion H.; against this carriage the plank K., which is to be planed, tongued, and grooved, is placed, and is made to advance with it. It will be manifest, however, that the plank may be moved forward by other means; as, for example, by an endless chain or band, passing around drums or chain wheels, or by means of geared friction wheels borne up against it. To cause the carriage and plank to move forward readily, there may be friction rollers *f*. *f*. *f*. placed horizontally and extending under them; the rollers *f*. *f*. *f*. which stand vertically, are to be made to press against the plank, and keep it close to the carriage, and thus prevent the action of the cutters from drawing the plank up from its bed in cutting from the planed surface upwards; they may be borne against it by means of weights or springs, in a manner well known to machinists. In a single horizontal machine, the horizontal friction rollers may be geared, and the pressure rollers placed above them to feed the board with or without the carriages, a bed plate being used directly under the planing cylinder.

Fig. 2 is a separate view of the planing cylinder, with its knives or cutters, and Fig. 3 an end view of one of the heads. E. E. are the revolving cutters or tongueing and grooving wheels, and D. D. whirls upon their shafts, which may be driven by bands or otherwise, so as to cause said wheels to revolve in the proper direction.

Fig. 4. is a side view of one of these wheels; Fig. 5 is an edge view of the tongueing wheel, and Fig. 6 an edge view of the grooving wheel, the latter being each shown with two cutters in place. The number of cutters on these wheels may be varied, but they are represented as furnished with four. The cutters may be fixed on the sides of circular plates, with their edges projecting beyond the periphery of said plate.

The edges of the plank, as its planed part passes the planing cylinder, are brought in contact with the above described tongueing and grooving wheels, which are so placed upon their shafts as that the tongue and groove shall be left at the proper distance from the face of the plank, the latter being sustained against the planing cylinder by means of the carriage or bed plate or otherwise, so that it cannot deviate, but must be reduced to a proper thickness, and correctly tongued and grooved.

In Fig. 1, above referred to, only one carriage and one pair of cutter wheels are shown, it not being deemed necessary to represent those on the opposite side, they being similar in all respects.

Fig. 7 represents the same machine, with the axis of the planing cylinder placed horizontally, and intended to operate on one plank only at the same time. A. A. is the frame; B. B. the heads of the planing cylinder; C. C. the knives or cutters attached to said heads. To meet the different thicknesses of the planks or boards, the bearings of the shaft or cylinder may be made moveable by screws or other means, to adjust it to the work; or the carriage or bed plate may be made so as to raise the board or plank up to the planing cylinder. E. and E.′ are the revolving cutters or tongueing and grooving wheels, which are placed upon vertical shafts, having upon them pulleys D. D., around which pass belts or bands from the main drum I., to which a revolving motion may be given by any adequate motive power.

From the drum I., a belt, L., passes also around the pulley, *b.*, on the shaft of the planing cylinder, and gives to it the requisite motion. There may in this machine be a horizontal carriage moved forward by a rack and pinion, in a manner analogous to that represented in Fig. 1; but in the present instance the plank is supposed to be advanced by means of one or two pairs of friction or feed rollers, shown at f′. f′.; the uppermost f′. f′. of the pairs of rollers may be held down by springs, or weighted levers, which it has not been thought necessary to show in this drawing, as such are in common use. The lowermost of these rollers may be fluted or made rough on their surfaces, so as to cause friction on the under side of the plank. M. M′. are pulleys on the axles of these lower rollers which are embraced by bands, N. N′., which also pass around a pulley, O., on a shaft which crosses the frame A. A., and has a pulley T., on it, which is embraced by the belt P., on a pulley, Q., on the shaft of the main drum, I.; these bands and pulleys serve to give motion to the feed rollers, as will be readily understood by inspect-

Amended specification.

ing the drawing. R. R. are guide strips used in place of the rollers, used for the same purpose, and also for bearing or friction rollers when the machine is vertical, to direct one edge of the plank, and against its opposite edge; any pressure may be used equal to the weight of the board or plank, when worked in a vertical position. One of the cutter wheels should be made adjustable, to adapt it to stuff of different widths.

The planing cylinder, and likewise the cutter, or tongueing and grooving wheels, may be constructed in the manner represented in Figures 2, 3, 4, 5 and 6, and herein before fully described. One of the heads of the planing wheel may be made moveable to accommodate its width to the width of the boards or plank to be planed.

The respective parts of this machine may be varied in size, as may also the velocity of the motion of the planing cylinders and cutter wheels; but the following has been found to answer well in practice. The planing cylinder, having four knives or cutters, may be twelve inches in diameter, and may make two thousand and upwards revolutions in a minute. In a machine like that shown in Fig. 7, the main drum I. may be two feet in diameter, and may be driven with the speed of 500, and upwards, revolutions in a minute. The pulleys on the planing cylinder, and on the cutter wheels, may be six inches in diameter. The plank should be moved forward at the rate of about one foot for every hundred revolutions of the cutter wheel; and, of course, the diameter of the feed rollers and of the pulleys by which they are turned, must be so graduated as to produce this result. The size and speed of the above parts of this machine may be in some degree varied; but the above have been found to work well.

Having thus fully described the parts and combination of parts, and operation of the machine for planing, tongueing, and grooving boards or plank, and shown various modes in which the same may be constructed and made to operate without changing the principle or mode of operation of the machine, what is claimed therein as the invention of William Woodworth, deceased, is the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device, to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed, to the unplaned surface, as described.

And also the combination of the rotating planes with the cutter wheels, for tongueing and grooving, for the purpose of planing, tongueing, and grooving boards, &c., at one operation, as described. And also the combination of the tongueing and grooving cutter wheels for tongueing and grooving boards, and at one operation, as described.

And, finally, the combination of either the tongueing or the grooving cutter wheel for tongueing or grooving boards, &c., with the pressure rollers, as described—the effect of the pressure rollers in these operations being such as to keep the boards, &c., steady, and prevent the cutters from drawing the boards towards the centre of the cutter wheels, whilst it is moved through by machinery. In the planing operation, the tendency of the plane is to lift the boards directly up against the rollers, but in the tongueing and grooving, the tendency is to overcome the friction occasioned by the pressure of the rollers.

WILLIAM W. WOODWORTH,
Administrator of William Woodworth, deceased.

Witnesses: JAMES MILHOLLAND,
CHS. M. KELLER.

The United States of America, to all to whom these letters patent shall come:

Whereas William W. Woodworth, administrator of William Woodworth, deceased, of Hyde Park, N. Y., has alleged that said William Woodworth invented a new and useful improvement in machines for planing, tongueing, and grooving, and dressing boards, &c., for which letters patent were granted, dated the 27th day of December, 1828, which letters patent have been extended (as will appear by the certificates appended thereto, copies of which are hereunto attached,) for fourteen years from the expiration of said letters patent, and which letters patent are hereby cancelled on account of a defective specification, which he states has not been known or used before said William Woodworth's application; has made oath that he is, and that said William Woodworth was, a citizen of the United States; that he does verily believe that said William Woodworth was the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the treasury of the United States the sum of fifteen dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:—

These are therefore to grant, according to law, to the said William W. Woodworth, in trust for the heirs at law of said W. Woodworth, their heirs, administrators, or assigns, for the term of fourteen years from the twenty-seventh day of December, one thousand eight hundred and twenty-eight, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said William W. Woodworth, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

[SEAL.]

Given under my hand at the city of Washington, this eighth day of July, in the year of our Lord one thousand eight hundred and forty-five, and of the independence of the United States of America the seventieth.

JAMES BUCHANAN,
Secretary of State.

Countersigned and sealed with the seal of the Patent office.

HENRY H. SYLVESTER,
Acting Commissioner of Patents.

And your orator does further state to your honors, that the said William Woodworth, and those lawfully claiming under him by inheritance or assignment, have erected and put in operation many machines in different parts of the country, by which a large amount of boards and plank have been planed and tongued and grooved and dressed for use. And your orator states, in particular, that he has erected and maintained, and still maintains, a large and expensive establishment, built for the express purpose of his business, in the district of Southwark, for planing, tongueing, and grooving boards with machines constructed according to the said letters patent and specifications, the cost and value of which is not less than fifty thousand dollars; which said machines have been used by your orator to the great saving of labor and to the great benefit of the public; whereby he might and could have derived to himself great profit, but for the illegal interference with the just exercise of his rights, as secured to him by the said letters patent and instruments in writing, as aforesaid.

And your orator further shows to your honors, as he is informed and believes, that the defendant in this suit, well knowing the facts aforesaid, without any legal grant or license therefor, and in defiance of the patent right aforesaid, has, ever since the second day of April last past, or thereabouts, operated and kept in operation on the wharf on the river Delaware, between Washington and Christian streets, in the building known as Snowden's building, and within the district so as aforesaid granted to your orator, a machine in which boards are planed, tongued, and grooved in the same manner, and operating in the same way in every respect, as in the said Woodworth machine; that the planing part of the said machine now in use and operation by the defendant is the same which was heretofore used and run by the said defendant, together with one Daniel L. Betts, in the city of Albany, in the State of New York, from whence it was brought by this defendant; and that the said planing part of the said machine, whilst in use and operation as aforesaid by this defendant and the said Betts, in the said city of Albany, was the subject of a suit entered by one John Gibson, in the circuit court of the United States, for the northern district of New York, against this defendant and the said Daniel L. Betts, in which suit, on the ninth day of December, 1847, after reading of the bill of complaint filed in the cause, and the affidavits and papers annexed thereto, and after hearing counsel for the plaintiff and the said defendants, who appeared in person, an injunction was ordered, enjoining the said defendants from using, operating, selling, or disposing of the said machine, and from being in any way concerned in any use, operation, or sale, or disposition of the same; which said injunction is still in full force, never having been dissolved or modified in any way, as your orator has been informed and truly believes; and that the suit entered by the said John Gibson, as aforesaid, in the said circuit court, for the northern district of New York, against this defendant and the said Daniel L. Betts, was to restrain the said defendants from an infringement of the patent right of the said Woodworth machine, by the use of the machine then used and operated upon [by] the said defendants; and the said defendant is engaged in using the said machine so in use by him; has ever since contrived to construct and use, or vend to others to be used, said machines, and persists in so doing and refuses to desist, though warned and requested so to do, whereby great profit hath accrued to the said defendant, and great injury resulted to your orator. Your orator cannot with certainty state the amount of the profits thus unlawfully derived by the defendant, but believes the same to be of the full sum of   thousand dollars, and so charges the fact to be, and prays that the defendant may be required to disclose thereto, and account for all profits arising therefrom.

Notice to desist.

Damage.

And now, to the end that the defendant may be compelled to account for, and pay over, the income thus unlawfully derived from the violation of the rights of your orator as above set forth, and be restrained from any further violation of said rights:

Prayer for injunction.

Your orator prays, that your honors would grant a writ of injunction, restraining the defendant from any further construction, or sale, or use, in any manner of said machine so in use for planing, tongueing, and grooving, or either, or in any separate combination, of boards and plank, or from using, or vending, any of the products of said machines thus unlawfully in use, and put in operation, in violation of the rights of your orator as aforesaid. And that the machine, or machines, now in the possession or use, or under the control of the defendant, and the products thereof, may be forthwith destroyed or delivered up to your orator.

And your orator prays for such further relief as the equity of the case may require, and to your honors may seem meet.

May it please the honorable court to grant a writ of subpœna, directed to the said Daniel Barnum, and commanding him to appear and make answer unto this bill of complaint, and to perform and abide by such orders and decrees herein as to the court may seem required by the principles of equity and good conscience.

SIDNEY V. SMITH,
Of counsel with the plaintiff.

Personally appeared Jacob P. Wilson, who, upon being duly sworn, on oath, deposes and says, that all and singular the allegations of the foregoing bill are true, to his own knowledge, except so far as they are set forth upon his information, and such he verily believes to be true. He further deposes and says, that he verily believes that William Woodworth was the true and original inventor of the machine or improvement, as set forth in the foregoing bill, and according to the plan, specification, and description of the same, annexed thereto. He further deposes, that the said Daniel Barnum is infringing the rights secured by the letters patent set forth in said bill in manner following, to wit: That the machine used and run by the defendant for planing the surface of the board planed by it, has two rotating planes long enough to extend across the board or plank to be planed; these planes are attached to two of the arms of the disc; upon the outer edge of the disc is set four gouges or plane irons in shape of gouges, to aid in reducing the board to a uniform thickness. The board is first tongued and grooved on a separate machine; then, in lieu of the pressure rollers, there are two metallic gauges used, one on each side of the plank or board, one of them running in the groove, and the other running over the tongue; thus with a slight bow given to the bead plate, the board is made to yield to the curved shape of the bed plate and the metallic gauges, so as to bend at that part where the knives come in contact with it, arriving at precisely the same mode of operation, as to cutting under the gritty fibres and letting the knife free itself from the board, as was arrived at in what is called the McGregor machine, one of which was run and used by James M. Patton, of the city of Philadelphia, and against which an injunction was obtained, in this honorable court, by one or more of the grantees of the Woodworth patent right.

By this mode of operation the cone is made on the board instead of its being on the cutter wheel, which is in violation of the Woodworth patent. The tongueing and grooving are effected by means of a machine in form and appearance like the Woodworth machine for tongueing and grooving; the description of it is as follows: The board is fed through the machine by feed and pressure rollers, in the same way as is done in the Woodworth machine. The tongue is cut by two thin saws placed upon the same spindle, which is placed at right angles to the flat surface of the board; one of these saws cuts in upon each side of the tongue leaving it a suitable thickness; two other shafts are placed in the machine running horizontally with the face of the board. And two other saws, one upon each spindle, one placed upon those shafts or spindles, so adjusted as to cut out the champ or rabet, on each side of the tongue; thus by a combination of cutter wheels with pressure rollers, the same result is produced as that in the Woodworth machine. Upon the other side of the machine, where the groove is cut, two saws are set side by side upon a shaft of sufficient thickness to cut out the grooves; upon each side of these two saws is placed two chissel edged cutters to joint the edge of the board on each side of the groove; thus, by the combination of the two cutter wheels, so arranged and combined with the pressure rollers, a board or plank is tongued and grooved and brought to an uniform width throughout, as is done by the Woodworth machine.

J. P. WILSON.

Sworn before me this fifth day of April, A. D. 1849.

GEORGE PLITT, *U. S. Com'r.*

cert

ment, as set forth in the foregoing bill, and according to the plan, specification, and description of the same, annexed thereto. He further deposes, that the said Daniel Barnum is infringing the rights secured by the letters patent set forth in said bill in manner following, to wit: That the machine used and run by the defendant for planing the surface of the board planed by it, has two rotating planes long enough to extend across the board or plank to be planed; these planes are attached to two of the arms of the disc; upon the outer edge of the disc is set four gouges or plane irons in shape of gouges, to aid in reducing the board to a uniform thickness. The board is first tongued and grooved on a separate machine; then, in lieu of the pressure rollers, there are two metallic gauges used, one on each side of the plank or board, one of them running in the groove, and the other running over the tongue; thus with a slight bow given to the bead plate, the board is made to yield to the curved shape of the bed plate and the metallic gauges, so as to bend at that part where the knives come in contact with it, arriving at precisely the same mode of operation, as to cutting under the gritty fibres and letting the knife free itself from the board, as was arrived at in what is called the McGregor machine, one of which was run and used by James M. Patton, of the city of Philadelphia, and against which an injunction was obtained, in this honorable court, by one or more of the grantees of the Woodworth patent right.

By this mode of operation the cone is made on the board instead of its being on the cutter wheel, which is in violation of the Woodworth patent. The tongueing and grooving are effected by means of a machine in form and appearance like the Woodworth machine for tongueing and grooving; the description of it is as follows: The board is fed through the machine by feed and pressure rollers, in the same way as is done in the Woodworth machine. The tongue is cut by two thin saws placed upon the same spindle, which is placed at right angles to the flat surface of the board; one of these saws cuts in upon each side of the tongue leaving it a suitable thickness; two other shafts are placed in the machine running horizontally with the face of the board. And two other saws, one upon each spindle, one placed upon those shafts or spindles, so adjusted as to cut out the champ or rabet, on each side of the tongue; thus by a combination of cutter wheels with pressure rollers, the same result is produced as that in the Woodworth machine. Upon the other side of the machine, where the groove is cut, two saws are set side by side upon a shaft of sufficient thickness to cut out the grooves; upon each side of these two saws is placed two chissel edged cutters to joint the edge of the board on each side of the groove; thus, by the combination of the two cutter wheels, so arranged and combined with the pressure rollers, a board or plank is tongued and grooved and brought to an uniform width throughout, as is done by the Woodworth machine.

J. P. WILSON.

Sworn before me this fifth day of April, A. D. 1849.

GEORGE PLITT, *U. S. Com'r*.

cert

[For drawings see original, pp. 16, 17.]

Decree granting injunction.

And now, to wit, this second day of June, 1849, the matter having been brought on to be heard before this court, and the complainant appearing by Sidney V. Smith, St. George T. Campbell, and William H. Seward, and the defendant by William L. Hirst and E. W. Stoughton; and the bill of complaint and the affidavits produced by complainant and defendant respectively having been read, it is ordered, adjudged, and decreed, that the defendant, Daniel Barnum, be and he is hereby absolutely enjoined and restrained from any further construction, or use, or sale, in any way or manner, of the machine for planing, tongueing, and grooving flooring boards, &c., described in the amended specification set forth in the said bill, and known as Woodworth's planing machine.

And it is further adjudged and decreed, that the defendant, Daniel Barnum, do desist and refrain from constructing, using, or selling, in any way or manner whatsoever, the machines particularly described in the said bill, and in the affidavit of the complainant thereto annexed, as being located on the wharf on the river Delaware, between Washington and Christian streets, in the building known as Snowden's Building, in the district of Southwark, in the county of Philadelphia.

And it is further ordered, adjudged, and decreed, that the injunction, so issuing, do stand until the hearing of the cause, or the further order of the court.

J. K. KANE.

Afterwards, to wit, on the fourth day of June, A. D. 1849, comes the respondent, Daniel Barnum, by his solicitors, William L. Hirst and William W. Hubbell, esquires, and presents his answer, which answer is filed, and is in the words and of the tenor following, to wit:

Answer of respondent.

Circuit court of the United States, for the eastern district of Pennsylvania.

Jacob P. Wilson }
vs. } In equity.
Daniel Barnum. }

To the honorable the judges of the circuit court of the United States, for the eastern district of Pennsylvania.

Daniel Barnum being subpœnaed to answer a certain bill filed by Jacob P. Wilson, doth in obedience thereto respond, that he denies that, on or about the fourth day of December, 1828, one William Woodworth, then in full life, but since deceased, was the inventor of a certain improvement or machine for planing, tongueing, and grooving

boards and plank and other materials; and also denies that he, said Woodworth, made application to the proper department of the United States, at that time, for a patent. And this respondent, with a desire to be always just, admits, that on the 27th day of December, 1828, letters patent of the United States, duly executed, were issued to the said William Woodworth, in substance and effect as therein expressed and described, and not otherwise, a certified copy of which original letters patent your respondent calls upon the claimant to produce, and in default thereof he prays leave to produce and submit a certified copy of the same as evidence in this cause. And your respondent further answering, doth admit that the said letters patent were recorded anew on the 22d day of August, 1842, and were extended for seven years on the 16th day of November, 1842; and that renewed letters patent were issued thereon on the 8th day of July, A. D. 1845, upon the application of William W. Woodworth, administrator of the original patentee; but your respondent doth deny that the specification of the said reissue was substantially in all its parts the same as originally set forth and specified by the said Woodworth himself, and avers that the material differences are apparent on comparing the two specifications, and that the specification of the said reissue is not substantially, in all its parts, descriptive of the original invention of William Woodworth, deceased; and that it contains descriptive matter of substantial mechanism not invented by the said William Woodworth. And that the said reissue of letters patent, so far as relates to the said mechanism not invented by the said William Woodworth, now deceased, are void. And this respondent further avers, that in the original letters patent of the said William Woodworth, now deceased, the drawings attached thereto, and referred to in the said specification as part thereof, were consequently specified and made public thereby; and that the said drawings as well as the specification, set forth and clearly show the mechanical device of rollers in the combination, with other parts of the said machine; and that in his claim in the said patent he did not claim the said roller, nor any device analogous thereto, as his invention, in combination with the said other parts; that he either was not the inventor thereof in the said combination, or, if he was, that he never made oath to the fact; and that by not claiming them or any device analogous thereto he dedicated them to the public, and that the reissue therefor, so far as concerns the embodiment or claim of the said rollers in the several combinations therein claimed is void. And this respondent further avers, that the said William Woodworth, now deceased, did not vest the rollers in the machine of his invention with any power whatever to constitute them "pressure rollers," and that he neither professed to be the inventor of either anti-friction rollers or pressure rollers, in the combination of his invention. And that the claims in the said reissue, so far as regards the combination of "pressure rollers" with other parts is void, and that the said reissue is, therefore, if good in any part, only good and valid so far as regards the combination of the rotary cutting cylinder, the grooving cutter wheel, and the tongue-

ing cutter wheel, as constructed, all of them together to form one combination. And your respondent doth further aver, that the chief clerk of the Commissioner of Patents of the United States, well knowing the mechanical differences of the planing machine, described in the specification annexed to the reissue of letters patent to William W. Woodworth for planing machines, that had been invented and existed previous to the alleged invention of William Woodworth, deceased; but not observing that the said William Woodworth had never either made the necessary oath that he invented nor claimed the combination of rollers with rotating planing cylinders, nor with any other parts of the machine, granted a patent to this administrator for the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface, as described; and further granted rights as expressed by the following claims set forth in the patent, contrary to law, and in violation of the rights of the citizens of the United States. And your respondent, further answering, doth aver, that the elementary principles embodied in the planing cylinder, mentioned in said Woodworth's patent as applied to the purpose of planing boards, combined with passive retentive power, and guides, were expressed and fully set forth in mechanical device by one Bentham, in the patent granted to him in England, dated 23d April, 1793, published in volume 10th of the Repertory of Arts, 1799, page 303, and that the same is, and ever has of right been, public property in the United States of America; and that rotating cutting power for the purpose of planing boards or plank, combined with pressure and with guides, was patented by one Bramah, in England, on the 30th of October, 1802, and described in Ree's Encyclopœdia, title Planing Machine; and that before the 31st of July, 1827, one Malcolm Muir invented and first obtained a patent for Scotland. And afterwards, to wit, on the 31st of July, 1827, obtained a patent for England for a method of tongueing and grooving boards like unto that used by the respondent; and in 1793 the said Bentham also described the same method, as well as a method of holding the board during the operation of planing it by the various mechanical instruments described, both in the construction and operation, in his aforesaid patent.

And your respondent doth admit and affirm the allegation in the bill of complaint, that the said William Woodworth did erect and put in operation many machines in different parts of the country; and your respondent doth aver, that if said William Woodworth did invent the combining of the rollers with the other parts, that he not only dedicated the invention of combining them with the other parts; by neglecting either to make oath or lay claim to the invention of combining them by virtue of his patent, to the public, but also by such erecting, practically and in fact dedicated the combination of said rollers with other parts to the public. And your respondent entirely denies that he has made and constructed, or caused to be made and constructed, or set up and put in

boards and plank and other materials; and also denies that he, said Woodworth, made application to the proper department of the United States, at that time, for a patent. And this respondent, with a desire to be always just, admits, that on the 27th day of December, 1828, letters patent of the United States, duly executed, were issued to the said William Woodworth, in substance and effect as therein expressed and described, and not otherwise, a certified copy of which original letters patent your respondent calls upon the claimant to produce, and in default thereof he prays leave to produce and submit a certified copy of the same as evidence in this cause. And your respondent further answering, doth admit that the said letters patent were recorded anew on the 22d day of August, 1842, and were extended for seven years on the 16th day of November, 1842; and that renewed letters patent were issued thereon on the 8th day of July, A. D. 1845, upon the application of William W. Woodworth, administrator of the original patentee; but your respondent doth deny that the specification of the said reissue was substantially in all its parts the same as originally set forth and specified by the said Woodworth himself, and avers that the material differences are apparent on comparing the two specifications, and that the specification of the said reissue is not substantially, in all its parts, descriptive of the original invention of William Woodworth, deceased; and that it contains descriptive matter of substantial mechanism not invented by the said William Woodworth. And that the said reissue of letters patent, so far as relates to the said mechanism not invented by the said William Woodworth, now deceased, are void. And this respondent further avers, that in the original letters patent of the said William Woodworth, now deceased, the drawings attached thereto, and referred to in the said specification as part thereof, were consequently specified and made public thereby; and that the said drawings as well as the specification, set forth and clearly show the mechanical device of rollers in the combination, with other parts of the said machine; and that in his claim in the said patent he did not claim the said roller, nor any device analogous thereto, as his invention, in combination with the said other parts; that he either was not the inventor thereof in the said combination, or, if he was, that he never made oath to the fact; and that by not claiming them or any device analogous thereto he dedicated them to the public, and that the reissue therefor, so far as concerns the embodiment or claim of the said rollers in the several combinations therein claimed is void. And this respondent further avers, that the said William Woodworth, now deceased, did not vest the rollers in the machine of his invention with any power whatever to constitute them "pressure rollers," and that he neither professed to be the inventor of either anti-friction rollers or pressure rollers, in the combination of his invention. And that the claims in the said reissue, so far as regards the combination of "pressure rollers" with other parts is void, and that the said reissue is, therefore, if good in any part, only good and valid so far as regards the combination of the rotary cutting cylinder, the grooving cutter wheel, and the tongue-

ing cutter wheel, as constructed, all of them together to form one combination. And your respondent doth further aver, that the chief clerk of the Commissioner of Patents of the United States, well knowing the mechanical differences of the planing machine, described in the specification annexed to the reissue of letters patent to William W. Woodworth for planing machines, that had been invented and existed previous to the alleged invention of William Woodworth, deceased; but not observing that the said William Woodworth had never either made the necessary oath that he invented nor claimed the combination of rollers with rotating planing cylinders, nor with any other parts of the machine, granted a patent to this administrator for the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface, as described; and further granted rights as expressed by the following claims set forth in the patent, contrary to law, and in violation of the rights of the citizens of the United States. And your respondent, further answering, doth aver, that the elementary principles embodied in the planing cylinder, mentioned in said Woodworth's patent as applied to the purpose of planing boards, combined with passive retentive power, and guides, were expressed and fully set forth in mechanical device by one Bentham, in the patent granted to him in England, dated 23d April, 1793, published in volume 10th of the Repertory of Arts, 1799, page 303, and that the same is, and ever has of right been, public property in the United States of America; and that rotating cutting power for the purpose of planing boards or plank, combined with pressure and with guides, was patented by one Bramah, in England, on the 30th of October, 1802, and described in Ree's Encyclopœdia, title Planing Machine; and that before the 31st of July, 1827, one Malcolm Muir invented and first obtained a patent for Scotland. And afterwards, to wit, on the 31st of July, 1827, obtained a patent for England for a method of tongueing and grooving boards like unto that used by the respondent; and in 1793 the said Bentham also described the same method, as well as a method of holding the board during the operation of planing it by the various mechanical instruments described, both in the construction and operation, in his aforesaid patent.

And your respondent doth admit and affirm the allegation in the bill of complaint, that the said William Woodworth did erect and put in operation many machines in different parts of the country; and your respondent doth aver, that if said William Woodworth did invent the combining of the rollers with the other parts, that he not only dedicated the invention of combining them with the other parts; by neglecting either to make oath or lay claim to the invention of combining them by virtue of his patent, to the public, but also by such erecting, practically and in fact dedicated the combination of said rollers with other parts to the public. And your respondent entirely denies that he has made and constructed, or caused to be made and constructed, or set up and put in

boards and plank and other materials; and also denies that he, said Woodworth, made application to the proper department of the United States, at that time, for a patent. And this respondent, with a desire to be always just, admits, that on the 27th day of December, 1828, letters patent of the United States, duly executed, were issued to the said William Woodworth, in substance and effect as therein expressed and described, and not otherwise, a certified copy of which original letters patent your respondent calls upon the claimant to produce, and in default thereof he prays leave to produce and submit a certified copy of the same as evidence in this cause. And your respondent further answering, doth admit that the said letters patent were recorded anew on the 22d day of August, 1842, and were extended for seven years on the 16th day of November, 1842; and that renewed letters patent were issued thereon on the 8th day of July, A. D. 1845, upon the application of William W. Woodworth, administrator of the original patentee; but your respondent doth deny that the specification of the said reissue was substantially in all its parts the same as originally set forth and specified by the said Woodworth himself, and avers that the material differences are apparent on comparing the two specifications, and that the specification of the said reissue is not substantially, in all its parts, descriptive of the original invention of William Woodworth, deceased; and that it contains descriptive matter of substantial mechanism not invented by the said William Woodworth. And that the said reissue of letters patent, so far as relates to the said mechanism not invented by the said William Woodworth, now deceased, are void. And this respondent further avers, that in the original letters patent of the said William Woodworth, now deceased, the drawings attached thereto, and referred to in the said specification as part thereof, were consequently specified and made public thereby; and that the said drawings as well as the specification, set forth and clearly show the mechanical device of rollers in the combination, with other parts of the said machine; and that in his claim in the said patent he did not claim the said roller, nor any device analogous thereto, as his invention, in combination with the said other parts; that he either was not the inventor thereof in the said combination, or, if he was, that he never made oath to the fact; and that by not claiming them or any device analogous thereto he dedicated them to the public, and that the reissue therefor, so far as concerns the embodiment or claim of the said rollers in the several combinations therein claimed is void. And this respondent further avers, that the said William Woodworth, now deceased, did not vest the rollers in the machine of his invention with any power whatever to constitute them "pressure rollers," and that he neither professed to be the inventor of either anti-friction rollers or pressure rollers, in the combination of his invention. And that the claims in the said reissue, so far as regards the combination of "pressure rollers" with other parts is void, and that the said reissue is, therefore, if good in any part, only good and valid so far as regards the combination of the rotary cutting cylinder, the grooving cutter wheel, and the tongue-

ing cutter wheel, as constructed, all of them together to form one combination. And your respondent doth further aver, that the chief clerk of the Commissioner of Patents of the United States, well knowing the mechanical differences of the planing machine, described in the specification annexed to the reissue of letters patent to William W. Woodworth for planing machines, that had been invented and existed previous to the alleged invention of William Woodworth, deceased; but not observing that the said William Woodworth had never either made the necessary oath that he invented nor claimed the combination of rollers with rotating planing cylinders, nor with any other parts of the machine, granted a patent to this administrator for the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface, as described; and further granted rights as expressed by the following claims set forth in the patent, contrary to law, and in violation of the rights of the citizens of the United States. And your respondent, further answering, doth aver, that the elementary principles embodied in the planing cylinder, mentioned in said Woodworth's patent as applied to the purpose of planing boards, combined with passive retentive power, and guides, were expressed and fully set forth in mechanical device by one Bentham, in the patent granted to him in England, dated 23d April, 1793, published in volume 10th of the Repertory of Arts, 1799, page 303, and that the same is, and ever has of right been, public property in the United States of America; and that rotating cutting power for the purpose of planing boards or plank, combined with pressure and with guides, was patented by one Bramah, in England, on the 30th of October, 1802, and described in Ree's Encyclopœdia, title Planing Machine; and that before the 31st of July, 1827, one Malcolm Muir invented and first obtained a patent for Scotland. And afterwards, to wit, on the 31st of July, 1827, obtained a patent for England for a method of tongueing and grooving boards like unto that used by the respondent; and in 1793 the said Bentham also described the same method, as well as a method of holding the board during the operation of planing it by the various mechanical instruments described, both in the construction and operation, in his aforesaid patent.

And your respondent doth admit and affirm the allegation in the bill of complaint, that the said William Woodworth did erect and put in operation many machines in different parts of the country; and your respondent doth aver, that if said William Woodworth did invent the combining of the rollers with the other parts, that he not only dedicated the invention of combining them with the other parts; by neglecting either to make oath or lay claim to the invention of combining them by virtue of his patent, to the public, but also by such erecting, practically and in fact dedicated the combination of said rollers with other parts to the public. And your respondent entirely denies that he has made and constructed, or caused to be made and constructed, or set up and put in

operation, or vended to others to be set up and put in operation, a machine or machines for planing, tongueing, and grooving, or either, separately or in any separate combination, planks or boards, which were and are in all or any material parts substantially like, and upon the plan of the machine invented, made, and put in operation by said Woodworth, and described in the said letters patent, or either of them, and the specification and representation set forth in the bill of complaint, in all, any, or either of the parts and particulars patented by both or either of said letters patent, the one to William Woodworth, deceased, the other to William W. Woodworth, his administrator. But your respondent, acting in good faith towards all men, and particularly towards the citizens of the United States, in their rights involved in the planing machines of Bentham, Bramah, Muir, and Woodworth, and also towards the legal representatives of the said William Woodworth, and his or their assignees, jointly with one Thomas J. Wells, of whom he is assignee, did recently invent a new and useful machine, or improved method of planing boards, not before known or used, and of which they are the true and original inventors, for which they did in due form of law apply to the Commissioner of Patents of the United States, to grant to your respondent, and his legal representatives, the exclusive right to make, vend, and use the same, under and in accordance with the acts of Congress relating to the granting of letters patent for new and useful inventions; and the said Commissioner of Patents being surrounded by learned and scientific men, purposely selected, and whose exclusive business it is to examine into the mechanical facts involved in such applications, and who well knowing the state of the art of planing boards by machinery, previous to the granting of letters patent to the said William Woodworth, and to his administrator; and seeing fully that the mechanical differences of the invention of your respondent were fully, clearly, and properly set forth in his specification, and that therein it was declared that the same were entirely different in principle from the machines described in either of the said Woodworth patents; and the commissioner himself, and the learned examiners, expressly appointed in this great branch of our Government, for the purpose of adjudicating on such facts, decided that it was not only different from said Woodworth's patent, but that it was a new and useful method of planing boards; and thereupon the said commissioner in due form of law, did grant to your respondent, and his representatives, the full and exclusive right to the entire structure and principle for planing boards, in any and every part, and to make, vend, and use the same from the 13th day of March, 1849, for the term of fourteen years, a copy of which letters patent is hereto annexed, marked A, and a copy of the written description or specification with the claims, marked B; and your respondent prays leave to produce and exhibit to your honors the said letters patent in evidence. And your respondent, under and by virtue of this exclusive grant and authority vested in him by the proper branch of the Government, did at great expense and labor construct and put in operation a full and complete working machine, such as described in the said letters patent; and that the same hath been working to the great advantage, satisfaction, and benefit of the public, producing flooring boards planed in a manner superior to any ever heretofore planed by any machine whatever. And your respondent doth aver, that this is the only planing machine that he hath, since the date of his said patent, erected, constructed, or used, or hath any connection with in any way whatever, and supposes it to be the same machine referred to, or intended to be referred to, in the bill of complaint, from the fact that he, your respondent, hath no other in the building called Snowden's Building, referred to in the said bill of complaint, nor in any other place whatever. And your respondent, under and by virtue of the 16th section of the act of Congress of the 4th of July, 1836, providing for a process by bill in equity for the repeal of a patent, doth claim and aver, that he cannot be disturbed in the peaceable enjoyment and use of his said patented invention by any decree made in accordance with the present bill and prayer of the complainant; your respondent having a patent for the entire machine, and not for only a part thereof, or simply an improvement in a part. And your respondent further answering says, that it is fully apparent to any scientific, mechanical, or other well regulated or discriminating minds, on comparing the patent issued by the chief clerk of the Patent office to the administrator William W. Woodworth, with the old patent, or that issued to William Woodworth, that a fraud in fact has been practised and is fully apparent on the face of the issue of the new letters patent; and that the instrument, as it is vitiated or touched by fraud, is therefore considered, or ought to be considered, by the law, entirely and absolutely void, and of no effect whatever in a court of equity or law. And your respondent further answering, doth deny that he hath made and constructed, or caused to be made and constructed, or set up and put in operation, or vended to others to be set up and put in operation, any machine or machines for tongueing and grooving, or either separately, or in any separate combination, planks and boards, which machines were, and are in all or any material part, substantially alike, and upon the plan of the machines alleged to be invented and patented by said Woodworth, and described in the said letters patent granted to the said William Woodworth or his administrator; and said respondent, admitting that he did use a machine for tongueing and grooving boards in said Snowden's building, doth aver, that the machine used by him is substantially the same as that described by Mr. Bentham in his patent, and by Malcolm Muir in his patent in this answer before referred to; and that in the said machine he does not use any of the combination or parts invented by the said William Woodworth, or patented either by him or his administrator.

And your respondent doth further answer, that the planing machine now used by your respondent was not enjoined in the State of New York, as set forth in the bill of complaint, but that the same having at that time a tongueing and grooving apparatus annexed to it, by which boards were tongued, grooved, and planed at one continuous operation, and on account of the tongueing and grooving apparatus being identical with Woodworth's, the said tongueing and grooving apparatus, both separately and jointly with the planing apparatus, was enjoined, and the same was left and is now in the building in which it was so enjoined; but the planing apparatus not having been enjoined, as expressed by the learned judge at the time he gave his decision, was removed, and is now used as a separate and distinct machine, for the purpose of planing, as patented to your respondent. And your respondent, as a citizen of the United States, and also as a citizen of the State of Pennsylvania, doth claim and absolutely request the privilege of the inalienable right of all citizens to have the consideration and verdict of a jury of the country on the facts which the said bill of complaint sets forth, and your respondent in this his answer utterly and unconditionally denies, and in which a jury of the country has never yet had an opportunity to deliberate or make up a verdict. And the said respondent denies all and all manner of combination or illegal interference against or with the exercise of the rights of the claimant, as secured to him by the letters patent of said Woodworth and the alleged assignments to the claimants, and denies having any knowledge whatever of any assignment or assignments, as set forth in the said bill of complaint, and prays that he may be put to the proof of the same. Without this, that there is any other matter, cause, or thing in the said complainant's said bill of complaint contained, material or effectual in the law for this defendant to make answer unto, and not herein and hereby well and sufficiently answered, avoided, traversed, or denied, is true to the knowledge and belief of this defendant. All which matters and things this defendant is ready and willing to aver, maintain, and prove, as this honorable court shall direct. And the defendant humbly prays to be hence dismissed, with his reasonable costs and charges in the law in this behalf most wrongfully sustained, &c.

WM. W. HUBBELL,
W. L. HIRST,
Sol'rs for respondent.

Daniel Barnum, the respondent, being duly sworn, saith, that the facts set forth in the foregoing answer, so far as they are stated to depend on his own knowledge, are just and true; and so far as they are stated to depend on the knowledge and information of others, he believes them firmly to be true.

DANIEL BARNUM.

Sworn and subscribed before me, this 4th day of June, A. D. 1849.
GEORGE PLITT, *U. S. Com.*

A.

No. 6185.

The United States of America, to all to whom these letters patent shall come:

Whereas Daniel Barnum and Thomas J. Wells, of New York, N. Y., have alleged that they have invented a new and useful improvement in planing machines, (the said Wells having assigned all his right, title, and interest in the said improvement to the said Barnum,) which they state has not been known or used before their application; have made oath that they are citizens of the United States; that they do verily believe that they are the original and first inventors or discovers of the said improvement, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose. These are, therefore, to grant, according to law, to the said Daniel Barnum, his heirs, administrators, or assigns, for the term of fourteen years from the thirteenth day of March, one thousand eight hundred and forty-nine, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said D. Barnum and T. J. Wells, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed. Given under my hand at the city of Washington, this thirteenth day of March, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of the United States of America the seventy-third.

[SEAL.]

T. EWING,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent office.

EDMUND BURKE,
Commissioner of Patents.

B.

The schedule referred to in these letters patent, and making part of the same—to all to whom it may concern:

Be it known, that we, Daniel Barnum and Thomas J. Wells, both of the city, county, and State of New York, have invented, and applied to use, new and useful improvements in machinery for planing boards and plank; and we hereby declare the following descriptions, with the accompanying drawings, to be a full and clear description

and representation of the same. The same letters refer to the same parts in the different figures:

Figure 1 is a perspective representation of the machine, with its combinations.

Figure 2 is a ground plan or top view of a part of the machine, showing the curved fence, and the screw clamps or gouges I, (J cannot be seen in this fig.;) and also the disk E, with the gouge cutters C, upon the periphery; the finishers F, being true with face of the disk, cannot be seen.

Figure 1. A shows the main frame; B, the standard for the support of the shaft; C, upon which is seen the main driving pulley I; and also the face disk E, fitted with one or more, long or broad, smoothing knives or finishers F, the edge of which should form a line at right angles to the line of the shaft C. The disc is also fitted with six, more or less, deep cutting gouges, placed upon the periphery for the purpose of cutting off the roughest part.

"The gouges act first to chop or hew away the wood roughly, but to a flat surface, and then the finishers follow and reduce it to a smooth plane; this is accomplished by their being placed near the centre, so that they revolve in a rather smaller radius, and thus act upon the wood after the gouges have *have* finished." The curved fence H is constructed, (with a slight curve at the centre of the disk,) on two lines, at an angle with the line formed by the face of the disk, as seen in fig. 2, and diverging therefrom each way to the ends of the machine. I and J are gouges, or "screw clamps, with proper contrivances" adapted to both lines, and to the curve of the fence; and whether they are fitted with a tongue and groove, or any other device to act upon the edges of the board, they must extend beyond the disk, on each line of the fence, both in front and rear, as far as may be necessary to hold the board on the front line, as it enters the machine, and also, on the rear line of the fence as it leaves the machine. I and J are so constructed as to have a continued action upon the edges of the board from one end of the gauges to the other, so as to spring, and to present each portion of the board to the action of the finishers F on the disk, on a curve as the board passed through the machine. J is a fixture on the fence, as seen in the drawings and model, fitted with a tongue to operate as a clamp upon the under side of the groove in the board, as it is made to slide behind the tongue, and between it and the fence. I is fitted with a flange to overleap and clamp the tongue on the board in the same manner, and is also a fixture held firmly by screws to the cross slides T; these cross slides T, being adjustable in order to accommodate or to keep the gauge or clamp I, in contact with the different widths of boards, for this purpose weights may be attached to the cross slides T, as seen in the drawings and model, or any other convenient means may be used. This will be well understood. These gauges or clamps have neither weights nor springs to act by pressure upon the board; they are literally "screw clamps, with proper contrivances;" and they are so contrived as to clamp the board upon the edges, and to hold it firmly, producing a new result;

the springing a board, and presenting each portion of it, as it progresses through the machine, to the action of the finishers, on a curve, for the purpose of being planed; and also preventing the finished portion of the surface from coming into contact with the knives, on the back part of the wheel. K and K are connecting bars between the uprights l, l, and the double cams P. M and M are each a pair of eccentric clamps, constructed upon the principle described and shown in the specification and drawings of Thomas J. Wells' patent, dated April 11th, 1846. They are shown in the drawings with a light spring on the back to keep them in a position to act. Their eccentric form causes them to clamp the board on the forward motion, and to relax their hold on the return motion. They are placed upon the top of the uprights L and L, and are made to move alternately, producing a continuous motion. The gauge J extends the length of the line in front, and serves as a perpendicular guide to L and L, and also as a guide and support to the board upon its edge, and to direct it between the clamps, M and M, into the machine. The parallel motion of the clamps, M and M, is produced by the means of the rockers N and N, upon which the uprights L and L are seen to rest. The segments of the circles of N and N have their centre at M and M; consequently when M and M are made to vibrate on N and N, a parallel motion is produced without ways or slides, as seen in the drawings and model. The connecting bars K and K, have each a friction roller fitted to one end, which rollers are made to revolve within the grooves of the double cams, as seen at O. These grooved cams may be called female cams; the rollers O acting alternately upon the outer and inner side of the grooves, produces an arbitrary reciprocating motion. One of the double cams, P, and rollers, O, being on the opposite side of P, cannot be seen in the drawing. They are, however, the same in all respects as those which are seen. These cams are so proportioned that two-thirds of the revolution is taken up in giving the forward motion, and one-third on the return motion. The positions of the double cams are reversed; that is, one is a half revolution in advance of the other, so that one is giving a forward motion whilst the other is giving a return motion, which being made quicker than the forward motion, affords time for the receding clamp to return, and to take hold of the board and commence its forward motion before the preceding clamp lets go its hold, or commences its return. The arrangement and combination of the double cams P, the eccentric clamps and the rockers N and N, produce an uniform and continuous forward parallel motion, without ways or slides, and dispensing with all friction and expense in their construction; and by the combination of means which has not been before known or used. R and S show the feed pulley and belt which gives motion to the feeding apparatus.

The planing wheel or face disk E, is constructed upon the principle of the Bramah wheel, which was patented in 1802, and described in Ree's Encyclopedia, as a face disk, at right angles to the axis of motion with two sets of knives. The relative position and operation of

and representation of the same. The same letters refer to the same parts in the different figures:

Figure 1 is a perspective representation of the machine, with its combinations.

Figure 2 is a ground plan or top view of a part of the machine, showing the curved fence, and the screw clamps or gouges I, (J cannot be seen in this fig.;) and also the disk E, with the gouge cutters C, upon the periphery; the finishers F, being true with face of the disk, cannot be seen.

Figure 1. A shows the main frame; B, the standard for the support of the shaft; C, upon which is seen the main driving pulley I; and also the face disk E, fitted with one or more, long or broad, smoothing knives or finishers F, the edge of which should form a line at right angles to the line of the shaft C. The disc is also fitted with six, more or less, deep cutting gouges, placed upon the periphery for the purpose of cutting off the roughest part.

" The gouges act first to chop or hew away the wood roughly, but to a flat surface, and then the finishers follow and reduce it to a smooth plane; this is accomplished by their being placed near the centre, so that they revolve in a rather smaller radius, and thus act upon the wood after the gouges have *have* finished." The curved fence H is constructed, (with a slight curve at the centre of the disk,) on two lines, at an angle with the line formed by the face of the disk, as seen in fig. 2, and diverging therefrom each way to the ends of the machine. I and J are gouges, or " screw clamps, with proper contrivances" adapted to both lines, and to the curve of the fence; and whether they are fitted with a tongue and groove, or any other device to act upon the edges of the board, they must extend beyond the disk, on each line of the fence, both in front and rear, as far as may be necessary to hold the board on the front line, as it enters the machine, and also, on the rear line of the fence as it leaves the machine. I and J are so constructed as to have a continued action upon the edges of the board from one end of the gauges to the other, so as to spring, and to present each portion of the board to the action of the finishers F on the disk, on a curve as the board passed through the machine. J is a fixture on the fence, as seen in the drawings and model, fitted with a tongue to operate as a clamp upon the under side of the groove in the board, as it is made to slide behind the tongue, and between it and the fence. I is fitted with a flange to overleap and clamp the tongue on the board in the same manner, and is also a fixture held firmly by screws to the cross slides T; these cross slides T, being adjustable in order to accommodate or to keep the gauge or clamp I, in contact with the different widths of boards, for this purpose weights may be attached to the cross slides T, as seen in the drawings and model, or any other convenient means may be used. This will be well understood. These gauges or clamps have neither weights nor springs to act by pressure upon the board; they are literally " screw clamps, with proper contrivances;" and they are so contrived as to clamp the board upon the edges, and to hold it firmly, producing a new result;

the springing a board, and presenting each portion of it, as it progresses through the machine, to the action of the finishers, on a curve, for the purpose of being planed; and also preventing the finished portion of the surface from coming into contact with the knives, on the back part of the wheel. K and K are connecting bars between the uprights I, I, and the double cams P. M and M are each a pair of eccentric clamps, constructed upon the principle described and shown in the specification and drawings of Thomas J. Wells' patent, dated April 11th, 1846. They are shown in the drawings with a light spring on the back to keep them in a position to act. Their eccentric form causes them to clamp the board on the forward motion, and to relax their hold on the return motion. They are placed upon the top of the uprights L and L, and are made to move alternately, producing a continuous motion. The gauge J extends the length of the line in front, and serves as a perpendicular guide to L and L, and also as a guide and support to the board upon its edge, and to direct it between the clamps, M and M, into the machine. The parallel motion of the clamps, M and M, is produced by the means of the rockers N and N, upon which the uprights L and L are seen to rest. The segments of the circles of N and N have their centre at M and M; consequently when M and M are made to vibrate on N and N, a parallel motion is produced without ways or slides, as seen in the drawings and model. The connecting bars K and K, have each a friction roller fitted to one end, which rollers are made to revolve within the grooves of the double cams, as seen at O. These grooved cams may be called female cams; the rollers O acting alternately upon the outer and inner side of the grooves, produces an arbitrary reciprocating motion. One of the double cams, P, and rollers, O, being on the opposite side of P, cannot be seen in the drawing. They are, however, the same in all respects as those which are seen. These cams are so proportioned that two-thirds of the revolution is taken up in giving the forward motion, and one-third on the return motion. The positions of the double cams are reversed; that is, one is a half revolution in advance of the other, so that one is giving a forward motion whilst the other is giving a return motion, which being made quicker than the forward motion, affords time for the receding clamp to return, and to take hold of the board and commence its forward motion before the preceding clamp lets go its hold, or commences its return. The arrangement and combination of the double cams P, the eccentric clamps and the rockers N and N, produce an uniform and continuous forward parallel motion, without ways or slides, and dispensing with all friction and expense in their construction; and by the combination of means which has not been before known or used. R and S show the feed pulley and belt which gives motion to the feeding apparatus.

The planing wheel or face disk E, is constructed upon the principle of the Bramah wheel, which was patented in 1802, and described in Ree's Encyclopedia, as a face disk, at right angles to the axis of motion with two sets of knives. The relative position and operation of

and representation of the same. The same letters refer to the same parts in the different figures:

Figure 1 is a perspective representation of the machine, with its combinations.

Figure 2 is a ground plan or top view of a part of the machine, showing the curved fence, and the screw clamps or gouges I, (J cannot be seen in this fig.;) and also the disk E, with the gouge cutters C, upon the periphery; the finishers F, being true with face of the disk, cannot be seen.

Figure 1. A shows the main frame; B, the standard for the support of the shaft; C, upon which is seen the main driving pulley I; and also the face disk E, fitted with one or more, long or broad, smoothing knives or finishers F, the edge of which should form a line at right angles to the line of the shaft C. The disc is also fitted with six, more or less, deep cutting gouges, placed upon the periphery for the purpose of cutting off the roughest part.

" The gouges act first to chop or hew away the wood roughly, but to a flat surface, and then the finishers follow and reduce it to a smooth plane; this is accomplished by their being placed near the centre, so that they revolve in a rather smaller radius, and thus act upon the wood after the gouges have *have* finished." The curved fence H is constructed, (with a slight curve at the centre of the disk,) on two lines, at an angle with the line formed by the face of the disk, as seen in fig. 2, and diverging therefrom each way to the ends of the machine. I and J are gouges, or " screw clamps, with proper contrivances" adapted to both lines, and to the curve of the fence; and whether they are fitted with a tongue and groove, or any other device to act upon the edges of the board, they must extend beyond the disk, on each line of the fence, both in front and rear, as far as may be necessary to hold the board on the front line, as it enters the machine, and also, on the rear line of the fence as it leaves the machine. I and J are so constructed as to have a continued action upon the edges of the board from one end of the gauges to the other, so as to spring, and to present each portion of the board to the action of the finishers F on the disk, on a curve as the board passed through the machine. J is a fixture on the fence, as seen in the drawings and model, fitted with a tongue to operate as a clamp upon the under side of the groove in the board, as it is made to slide behind the tongue, and between it and the fence. I is fitted with a flange to overleap and clamp the tongue on the board in the same manner, and is also a fixture held firmly by screws to the cross slides T; these cross slides T, being adjustable in order to accommodate or to keep the gauge or clamp I, in contact with the different widths of boards, for this purpose weights may be attached to the cross slides T, as seen in the drawings and model, or any other convenient means may be used. This will be well understood. These gauges or clamps have neither weights nor springs to act by pressure upon the board; they are literally " screw clamps, with proper contrivances;" and they are so contrived as to clamp the board upon the edges, and to hold it firmly, producing a new result;

the springing a board, and presenting each portion of it, as it progresses through the machine, to the action of the finishers, on a curve, for the purpose of being planed; and also preventing the finished portion of the surface from coming into contact with the knives, on the back part of the wheel. K and K are connecting bars between the uprights l, l, and the double cams P. M and M are each a pair of eccentric clamps, constructed upon the principle described and shown in the specification and drawings of Thomas J. Wells' patent, dated April 11th, 1846. They are shown in the drawings with a light spring on the back to keep them in a position to act. Their eccentric form causes them to clamp the board on the forward motion, and to relax their hold on the return motion. They are placed upon the top of the uprights L and L, and are made to move alternately, producing a continuous motion. The gauge J extends the length of the line in front, and serves as a perpendicular guide to L and L, and also as a guide and support to the board upon its edge, and to direct it between the clamps, M and M, into the machine. The parallel motion of the clamps, M and M, is produced by the means of the rockers N and N, upon which the uprights L and L are seen to rest. The segments of the circles of N and N have their centre at M and M; consequently when M and M are made to vibrate on N and N, a parallel motion is produced without ways or slides, as seen in the drawings and model. The connecting bars K and K, have each a friction roller fitted to one end, which rollers are made to revolve within the grooves of the double cams, as seen at O. These grooved cams may be called female cams; the rollers O acting alternately upon the outer and inner side of the grooves, produces an arbitrary reciprocating motion. One of the double cams, P, and rollers, O, being on the opposite side of P, cannot be seen in the drawing. They are, however, the same in all respects as those which are seen. These cams are so proportioned that two-thirds of the revolution is taken up in giving the forward motion, and one-third on the return motion. The positions of the double cams are reversed; that is, one is a half revolution in advance of the other, so that one is giving a forward motion whilst the other is giving a return motion, which being made quicker than the forward motion, affords time for the receding clamp to return, and to take hold of the board and commence its forward motion before the preceding clamp lets go its hold, or commences its return. The arrangement and combination of the double cams P, the eccentric clamps and the rockers N and N, produce an uniform and continuous forward parallel motion, without ways or slides, and dispensing with all friction and expense in their construction; and by the combination of means which has not been before known or used. R and S show the feed pulley and belt which gives motion to the feeding apparatus.

The planing wheel or face disk E, is constructed upon the principle of the Bramah wheel, which was patented in 1802, and described in Ree's Encyclopedia, as a face disk, at right angles to the axis of motion with two sets of knives. The relative position and operation of

both sets, as well as the form of tools, are thus described in Bramah's language: "Instead of common tools, bent knives, spoke shaves, or deep cutting gouges, are used for cutting off the roughest part, and planes of various shapes and construction, as the work may require, are applied to follow the former in succession under the same operation, and which latter I call finishers." The work to be done with our improvements require the planes or finishers to be constructed of sufficient length to extend across the entire board, and they are placed upon the disk at about 15 degrees from a radial line from the centre of the disk; they are also placed nearer the centre, so that they revolve in a rather smaller radius than the gouge cutters C, on the periphery, and thus act upon the wood, after the gouges have finished cutting off the roughest part. The position and angles of the finishers F, relatively with the disk E, and the board when sprung around the fence, are such that the smooth finish of each cut is given, at or nearly in vertical line from the centre of the disk, at or nearly at right angles with the grain of the wood and the whole width of the board. This effect is produced by means of the curved fence against which the board is to be held and sprung to a corresponding curve, and by the progressive motion of the board, as it moves by the disk, a small portion is left by the gouges A, to be taken off by the finishers E, at each stroke, at or nearly at the centre of the curve while cutting with the grain, leaving no circular marks across the board, as the circular marks of each preceding cut is taken off by the succeeding cut of the finishers in the manner above described; by which means an absolutely level surface is produced, finished in a manner far superior to that of any other planing machine known.

The curved fence used in these improvements is formed as seen in Fig. 2, on two lines at an angle with the face of the disk E. This form of fence requires the board to be sprung and presented to the action of the finishers on a curve. The means used to hold a board must be such as not only to hold it when sprung, but they must also be adapted to the end of springing each portion of the board, as it approaches the point of operation, commencing at the end as it enters the machine, and changing the curve in the board gradually from one end to the other as it progresses through the machine. Each portion of the board is thus made to assume the same relative position with the finishers, while it is being operated upon by them, so that an uniform and even surface is produced the entire length of the board, and for this purpose the screw clamps or gauges, with proper contrivances to act upon the edges embracing the entire portion of the board which is sprung, and holding it at the point of operation, are used in contradistinction to the pressure rollers as applied and used by Woodworth, and the difference between them is strikingly manifest, for the gauges are firmly held by screws, and act upon the edge arbitrarily by clamping it; the rollers act only by pressure upon the face of the board, by weighted levers or springs. The gauges act upon the edges to spring the board between the disk and fence, while the knives are rotating over and operating to plane the surface; while the rollers can only be placed across the surface of the board, one of each being placed in front and rear of the disk; they (the rollers) therefore act on different lines of the fence without any means to control or power over the board, after leaving the front roller to curve it, while it is passing the planing wheel around the fence to the roller, on the rear line of the fence; the correctness of the differences, as above recited, will be demonstrated by an examination of the curved fence and gauges in combination with the disc, as shown in Fig. 2. The fact that pressure rollers cannot possibly be used as a substitute for the gauges or clamps in combination with a face wheel or disk, will also be seen from an examination of this Fig., in the results which must be obtained were rollers used. To illustrate this, we will suppose the gauges I and J are removed (J being under I in this Fig., is not seen) and rollers substituted in their place; as they act only on the face of the board, the rollers must be placed so as to clear the gouges on the periphery of the disk; this would place them on each line of the fence about at the point where the cross slides T are seen. Now suppose a board or plank of a sufficient thickness to fill the space between the fence and disk at the centre or shaft, is placed upon the front line of the fence, it is plain that unless the rollers can be made to change the line of the motion of the board or plank, it must or would continue on the front line, directly against the cutters on the back part of the disk, and, therefore, could not reach the roller on the rear line of the fence. This result must inevitably follow the introduction of each and every board or plank put into the machine with rollers, as a means of holding the board; and every board or plank thus attempted to be planed would be spoiled. The impossibility, therefore, of producing a successful result with rollers as a means of holding the board in these combinations, demonstrates the entire want of analogy (which is by some said to exist) between the gauges or screw clamps, with proper contrivances, which are used in these combinations, and the pressure rollers described and claimed in the Woodworth patent. The face disk with gauges, are finishers, and the screw clamps, with proper contrivances, were patented by Bramah, in 1802. We do not claim the original machine except in combination with our improvements. Bramah used short finishers, leaving the surface marked in circular scores. We use long finishers, by which means (the board being curved) we finish the surface with the grain, leaving no circular marks. Bramah's finishers being short and placed near the gouges upon the periphery, can only finish the surface while cutting from one edge to the other in circles; our finishers being long, embrace the whole width of the board, coming in contact with the surface on the curve, nearly at right angles, each cut finishing a small portion with the grain, and each portion of the surface, when thus finished by each cut, must of necessity be parallel to the face of the disk.

Having thus fully described the parts and combination of parts of our invention, with the modes in which we contemplate applying the same, what we claim as our invention, and desire to secure by letters patent, is—

The combination, arrangement, and construction of the double cams, P, the eccentric clamps, M and M, and the rockers, N and N, for the purpose of producing an uniform, continuous, and parallel feed motion without rollers, rack and pinions, endless chains, or any common device, by which means we produce a parallel feed motion without the expense and friction of ways or slides, whether applied to planing machines or for any other purpose, substantially as described and shown.

Also, the construction of the fence D, or any analogous device, against which to spring or curve a board to be planed, in combination with screw clamps or gauges, with proper contrivances, I and J, or other means, adapted to the curve on the fence D, extending each way from the centre of the curve and disk, embracing each line of the fence, as far as may be necessary for the purpose of receiving the board or plank, by clamping or otherwise acting upon the edges while it is in the front line of the fence, holding and directing it around the curve, springing and presenting each portion of the board successively to the action of the finishers on the disk on a curve; and also preventing the finished portion of the surface from coming in contact with the knives in the back part of the disk, as it passes out of the machine, on the rear line of the fence, substantially as described and shown.

Also, the combination of the curved fence H and gauges I and J, or any other device for springing and presenting a board or plank on a curve to the action of planes or finishers on a disk, with the disk E, and the long or broad finishers, F, to extend across the board the entire width and at right angles with the shaft C, for the purpose of planing boards and plank when presented on a curve, thereby finishing them while cutting with the grain, and leaving no circular marks or scores across the board or plank in the manner herein before substantially described and shown.

The effects of these improvements are the production of a new parallel feed motion, without the friction and expense of ways or slides.

And also a new method or principle of presenting a board or plank to the action of the knives or finishers, revolving on a disk in a curve, by which means the finished surface is made while the finishers are cutting with the grain of the wood, thus converting the disk, or Bramah wheel, which has hitherto been comparatively of little worth, into a most useful and valuable machine. The tendency of the planing operation with the disk is, [to] move the board edgewise in the same plane in which the knives revolve, in contradistinction to the Woodworth cylinder, which tends to lift the boards directly up from its bed, as it cuts up and out from the reduced or planed, to the unplaned surface, as declared in said Woodworth patent.

DANIEL BARNUM,
THOMAS J. WELLS.

Witness: HENRY T. DREW,
CHARLES W. SMITH.

And afterwards, to wit, on the twenty-ninth day of June, A. D. 1849, comes the complainant by his solicitor aforesaid, and presents his replication to the aforesaid answer of the respondent, which replication is filed, and is in the words and of the tenor following, to wit:

Replication.

The replication of Jacob P. Wilson, complainant, to the answer of Daniel Barnum, defendant.

This repliant, saving and reserving unto himself all and all manner of advantage and exception to the manifold insufficiencies of the said answer, for replication thereunto saith, that he will aver and prove his said bill to be true, certain, and sufficient in the law to be answered unto; and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant; without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver and prove, as this honorable court shall direct, and humbly pray as in and by his said bill he hath already prayed.

Motion to dissolve injunction.

And now, June 29, 1849, the defendant moves:

1. To dissolve the injunction on the coming in of the answer.
2. That an order be made on plaintiff to bring his action at law, and speed the case to be tried at October sessions.
3. Or that an issue be ordered to be tried at same time.
4. And that surety be ordered, to be given by plaintiff, or allowed to be given by defendant.

Whereupon the court make and direct that an order be entered in the words and of the tenor following, to wit:

Feigned issue.

And now, August 1, 1849, the several motions made by the defendant having been heard, and the court having advised thereupon, it is ordered that the injunction heretofore granted in this cause upon the prayer of the complainant, do stand continued until the eleventh day of August, 1849, at noon; and that if the complainant shall, before that time, file in the office of the clerk a bond to the defendant in the sum of ten thousand dollars with security, approved by one of the judges of this court, conditioned for the payment of all loss and damages that the defendant may sustain, or may have sustained, by reason of the granting of the said injunction, then and not otherwise the said injunction shall thereafter stand continued till hearing and further order. And it is further ordered, that the parties do proceed to a trial at law at the next ensuing term of this court, upon the following issue, viz: Whether the making, vending, and using of the machine of the defendant, mentioned and referred to in his answer in this cause, is or is not an infringement of the amended letters patent granted to William W. Woodworth, as set forth in the complainant's bill, the said amended letters patent being, for the purpose of the issue, assumed to be legally valid; and that the said issue be set down for trial on the fifteenth day of October next; and that the parties be at liberty to read the depositions taken in this cause of such of the witnesses as upon such trial shall be proved to be dead, or unable to attend to be examined. And that on the trial of the said issue the counsel of the complainant, in support of the affirmative thereof, shall be entitled to begin and conclude in the argument before the jury.

And afterwards, to wit, on the sixth day of August, A. D. 1849, by agreement of parties, and with the consent of the court, an amendment to the feigned issue was filed, which is in the words and of the tenor following, to wit:

Amendment of feigned issue.

The defendant, before security given by the plaintiff in this case, moves: Inasmuch as he, the defendant, did use two separate and distinct machines, the one for tongueing and grooving, and the other for planing; and for the latter, to wit, for the planing machine, he has letters patent; and for the former, to wit, the tongueing and grooving machine, he has not a patent, both of which machines are charged by the claimant as infringements on the patent under which he claims. And as the issue framed by the learned court reads "whether the making, vending, and using of the machine of the defendant," &c., the said issue not specifying which of the two machines. The defendant, therefore, as above, moves that the issue be amended to read "whether the making, vending, and using of either or both, and if either, which, of the machines of the defendant," &c.

WM. W. HUBBELL,
Attorney for defendant.

Names of sureties approved.

And now, to wit, August 6, 1849, George B. Sloat and Henry R. Wilson, of the county of Philadelphia, and William Tams, No. 504 Vine street, Philadelphia, justified as bail in the sum of $10,000, according to the order of the court in above case made, August 1, 1849.

Second amendment of issue.

And now, to wit, August 7, 1849, on motion of Sidney V. Smith, solicitor for complainant, the amendment allowed August 6, 1849, by the court, to the order of August 1, 1849, is amended so as to read, "Whether the making, vending, and using of either or both separately, or in combination, and if either, which, of the machines of the defendant," &c.

And afterwards, to wit, on the tenth day of August, A. D. 1849, the complainant aforesaid, by his solicitor aforesaid, presents the bond of Wilson and others to Daniel Barnum, which is approved by the court, and ordered to be filed, and which is in the words and of the tenor following, to wit:

Bond, Wilson to Barnum.

Know all men by these presents, that we, Jacob P. Wilson, George B. Sloat, and Henry R. Wilson, all of the county of Philadelphia, and William Tams, of the city of Philadelphia, are held and firmly bound unto Daniel Barnum, of the said county of Philadelphia, in the sum of ten thousand dollars, lawful money of the United States, to be paid to the said Daniel Barnum, his heirs, executors, administrators, and assigns; to which payment, well and truly to be made, we bind ourselves, and each of us, jointly and severally, our and each of our respective heirs, executors, and administrators, firmly by these presents. Sealed with our seals, dated this tenth day of August, anno domini, eighteen hundred and forty-nine.

Whereas the said Jacob P. Wilson hath lately, to wit, of April session, A. D. 1849, No. 6, filed his bill in equity, in the circuit court of the United States, in and for the eastern district of Pennsylvania, against the said Daniel Barnum, as by reference thereto will more fully appear. And whereas on the 1st day of June, A. D. 1849, the said court, upon motion, made the following order, to wit:

"And now, June 1, 1849, the matter having been brought on to be heard before this court, and the complainant appearing by Sidney V. Smith, St. George T. Campbell, and William H. Seward; and the defendant by William L. Hirst and E. W. Stoughton, and the bill of complaint and the affidavits produced by complainant and defendant respectively having been read, it is ordered adjudged, and decreed, that the defendant Daniel Barnum be, and he is hereby, absolutely, enjoined and restrained from any further construction, or use, or sale, in any way or manner, of the machine for planing, tongueing, and grooving flooring boards, &c., described in the amended specification set forth in the said bill, and known as Woodworth's planing machine. And it is further adjudged and decreed, that the defendant Daniel Barnum do desist and refrain from constructing, using, or selling, in any way or manner whatsoever, the machines particularly described in the said bill, and in the affidavit of the complainant thereto annexed, as being located on the wharf on the river Delaware, between Washington and Christian streets, in the building known as Snowden's building, in the district of Southwark, in the county of Philadelphia.

And it is further ordered, adjudged, and decreed, that the injunction so issuing do stand until the hearing of the cause or the further order of the court.

And whereas, on the second day of June, A. D. 1849, an injunction was accordingly issued by the said court, and duly served upon the said Daniel Barnum, a copy whereof is as follows, to wit:

"UNITED STATES,
Eastern district of Pennsylvania, ss.

{ Seal U. S. cir. court, E. D. Penn'a. } The President of the United States, to Daniel Barnum, greeting:

Whereas Jacob P. Wilson, of Pennsylvania, lately exhibited his bill of complaint, in the circuit court of the United States, for the eastern district of Pennsylvania, against you, Daniel Barnum, praying to be relieved touching the matters therein complained of, and especially that you, Daniel Barnum, and all acting under you, may be restrained from further infringing the patent and the rights of the complainant in the premises in the said bill mentioned, in any way or manner, contrary to law or equity. We, therefore, in consideration thereof, and of the particular matters in the said bill set forth, do strictly command you, the said Daniel Barnum, and all acting under you, that you do absolutely desist and refrain from any further construction, or use, or sale, in any way or manner, of the machine for planing, tongueing, and grooving flooring boards, &c., described in the amended specification set forth in the said bill, and known as Woodworth's planing machine; and that you do desist and refrain from constructing, using, or selling, in any way or manner whatsoever, the machines particularly described in the said bill, and in the affidavit of the complainant thereto annexed, as being located on the wharf, on the river Delaware, between Washington and Christian streets, in the building known as Snowden's building, in the district of Southwark, in the county of Philadelphia, uutil the hearing of the cause, or the further order of the court.

Witness the honorable Roger B. Taney, chief justice of the Supreme Court of the United States, at Philadelphia, this second day of June, A. D. 1849, and in the 73d year of the independence of the United States. GEORGE PLITT, *Clerk C. C.*"

And whereas, also, on the 29th day of June, A. D. 1849, the said Daniel Barnum, by his attorney, moved the court as follows, to wit:

"And now, June 29, 1849, the defendant moves: 1. To dissolve the injunction on the coming in of the answer. 2. That an order be made on complainant to bring his action at law, and speed the case to be tried at October sessions. 3. Or that an issue be ordered to be tried at the same time. 4. And that surety be ordered to be given by complainant, or allowed to be given by defendant."

And whereas, on the 1st day of August, A. D. 1849, the said court made the following order in the above cause, to wit:

"And now, to wit, 1st August, 1849, the several motions made by the defendant having been heard, and the court having advised thereupon, it is ordered that the injunction heretofore granted in this cause, upon the prayer of the complainant, do stand continued until the eleventh day of August, 1849, at noon, and that if the complainant shall before that time file in the office of the clerk a bond to the defendant, in the sum of ten thousand dollars, with security approved by one of the judges of this court, conditioned for the payment of all loss and damage that the defendant may sustain, or may have sustained, by reason of the granting of the said injunction, then and not otherwise the said injunction shall thereafter stand continued until hearing and further ordered; and it is further ordered, that the parties do proceed to a trial at law, at the next ensuing term of this court, upon the following issue, to wit, whether the making, vending, and using of the machine of the defendant, mentioned and referred to in his answer in this cause, is or is not an infringement of the amended letters patent granted to William W. Woodworth, as set forth in the complainant's bill, the said amended letters patent being, for the purposes of the issue, assumed to be legally valid; and that the said issue be set down for trial on the fifteenth day of October next; and that the parties be at liberty to read the depositions taken in this cause, of such of the witnesses as, upon such trial, shall be proved to be dead or unable to attend to be examined; and that on the trial of the said issue the counsel of the complainant, in support of the affirmative thereof, shall be entitled to begin and conclude in the argument before the jury."

"And whereas, the said Jacob P. Wilson desires to enter, as his sureties in the said bond, the said George B. Sloat, Henry R. Wilson, and William Tams, who have been approved of by the court:

Now, the condition of this obligation is such, that if the said Jacob P. Wilson, George B. Sloat, Henry R. Wilson, and William Tams, or either of them, their or either of their heirs, executors, or administrators, shall pay, or cause to be paid, to the said Daniel Barnum, his heirs, executors, administrators, and assigns, all loss and damage that the said Daniel Barnum has heretofore sustained, or which he or his heirs, executors, administrators, or assigns, may hereafter sustain, by reason of the said injunction, from the date of the granting thereof, during its continuance, and until it shall be duly dissolved, then the above obligation to be void and of none effect, otherwise to be and remain in full force and virtue: Provided, however, nevertheless, that if the said Jacob P. Wilson shall obtain a final decree in the said cause, making said injunction perpetual, then this obligation to be void, otherwise to remain in full force and virtue.

JACOB P. WILSON, [L. S.]
GEO. B. SLOAT, [L. S.]
HENRY R. WILSON, [L. S.]
WM. TAMS. [L. S.]

Sealed and delivered in the presence of us—
SIDNEY V. SMITH.

And afterwards, to wit, on the fourth day of September, A. D. 1849, depositions taken before Judge Lawrence, Onondaga county, N. Y., are received and filed, which are in the words and of the tenor following, to wit:

Depositions.

NORTHERN DISTRICT OF NEW YORK, *ss:*

James P. Wilson, of the city of Philadelphia, being duly sworn, says, that he is the agent of the plaintiff in this suit, and is well acquainted with the facts and merits of the cause; that he is advised by the counsel of the plaintiff in this cause, and verily believes, that the testimony of Henry Gifford, of Syracuse, county of Onondaga, and State of New York, coarse salt manufacturer, Jacob Hausenfratz, of De Witt county, and State aforesaid, farmer, and Henry Young, of Syracuse aforesaid, laborer, is material and necessary for the plaintiff in the prosecution of this cause; that each of the said witnesses lives more than one hundred miles from the city of Philadelphia, where the court, at which this deponent expects the said cause to be tried, is appointed by law to be held; and this deponent further says, that as he is informed and believes the defendant in this suit resides in the city of Philadelphia aforesaid, about four hundred miles from the place where the examination of the said witnesses is expected to be taken; and that as he is also informed and believes the attorney and solicitor of said defendant resides in the city of Philadelphia aforesaid; and further this deponent saith not. JAMES G. WILSON.

Subscribed and sworn to before me, this 27th day of August, 1849.
JAMES R. LAWRENCE,
Judge of Onondaga county, State of New York.

Whereupon I made the following order:

Circuit court of the United States, for the third circuit and eastern district of Pennsylvania.

JACOB P. WILSON
vs. } In equity.
DANIEL BARNUM.

Let Henry Gifford, Jacob Hausenfratz, and Henry Young, the witnesses named in the within affidavit, be examined de bene esse before me accordingly, at Syracuse, in the county of Onondaga, New York, at my office therein, and let one day's notice be given to said defendant of such examination.

JAMES R. LAWRENCE,
Judge Onondaga county, N. York.

I admit due service of the above notice, August 27, 1849, and consent that the examination proceed this day, August 27, 1849.
DANIEL BARNUM.

Be it remembered, that on the 27th day of August, eighteen hundred and forty-nine, at the city of Syracuse, in the county of Onondaga, and

State of New York, James G. Wilson personally appeared before me, James R. Lawrence, county judge of said county of Onondaga, and State of New York, and made oath that he, the said James G. Wilson, was the agent of Jacob P. Wilson, and well acquainted with the facts and merits of this case; that the said Jacob Wilson was plaintiff in a suit then depending in the circuit court of the United States, for the third circuit in the district of Pennsylvania, in equity, wherein Daniel Barnum was defendant; that the testimony of Henry Gifford, of Syracuse, in said county, coarse salt manufacturer, Jacob Hausenfratz, of De Witt, and county aforesaid, farmer, and Henry Young, of Syracuse aforesaid, laborer, was material and necessary for the said plaintiff in the prosecution of such suit, and that each of the said witnesses live more than one hundred miles from the city of Philadelphia, where the court, at which he, the said James G. Wilson, as agent aforesaid, expected the said cause would be tried, was appointed by law to be held; that the defendant in said suit resided at the city of Philadelphia, about four hundred miles from Syracuse aforesaid, and that the attorney for the said defendants resided at the city of Philadelphia aforesaid; and the said James G. Wilson, agent as aforesaid, on behalf of said plaintiff, requested of me, that the said witnesses above named might be examined according to the act of Congress in such cases made and provided; whereupon I ordered that the said witnesses should be examined de bene esse before me, at Syracuse aforesaid, at my office in said city, on the twenty-seventh day of August, 1849, (having postponed the said examination from the 25th day of August, 1849, to the said 27th of August, 1849;) and the said Jacob P. Wilson, appearing before me, by his said agent, and by Samuel Blachford, his counsel, at my office at Syracuse, on this 27th day of August, 1819; and the said defendant having also appeared upon one day's notice to him, and stipulated in writing that the said examination do now proceed: I have therefore proceeded with the said examination, and the said Henry Gifford, Jacob Hausenfratz, and Henry Young, being carefully examined, and cautioned, and duly sworn or affirmed, to testify the truth, the whole truth, and nothing but the truth, depose and say, as follows: And first, the said Henry Young, for himself, says and testifies, as follows, my name is Henry Young; I reside in the city of Syracuse, in the county of Onondaga, and State of New York, and have resided there since 1817; am aged fifty-seven years; I knew Uri Emmons, at Syracuse, in 1823 and 1824; and I think he came here in the latter part of 1822; I knew a machine he got up here intended for jointing the edges of planks and boards for salt vats.

Question. When and where did you see that machine?

Answer. It was on what is now called the public square in Syracuse, at the time I have mentioned.

Question. Was it near the stage-house?

Answer. It was a little west of opposite the stage-house.

Question. Where was it put together?

Answer. Near the salt vats, west and near the line of the Syracuse and Onondaga coarse salt companies' works.

Question. How often did you see it after it was put up?

Answer. I saw it often; sometimes two or three times a day; sometimes I might miss a day; but pretty much every day, while they were trying it.

Question. Describe the machine.

Answer. This drawing (hereto annexed, marked A) describes the machine a good deal. There was a strong frame underneath, rollers attached to the top of the frame, like those described in said drawing, figure three. There was a cylinder attached to the frame near the centre of it, with knives on it. There was a carriage on top of the rollers; the timbers of the frame came up and formed a flange to guide the carriage. The carriage, I think, rose on the rollers I have described. The body of the cylinder was set under the rollers, so that the knives came above the rollers high enough to cut a shaving. The plank were put into the carriage edgewise. There were screws in the side of the carriage, to screw the plank together, to hold them steady and hold them fast. He afterwards made and put on clamps on the top of the carriage, to keep the carriage containing the plank from spreading. The carriage timbers were rather high.

Question. Were there or not any rollers in the machine other or for any other purpose than those which you have spoken of, and which are shown by figure 3 in the drawing, (exhibit A)?

Answer. I don't think there were any others.

Question. What was the object of the machine?

Answer. For jointing the edges of plank or boards.

Question. Was it of any use for that purpose?

Answer. No, sir.

Question. Was it of any use for planing boards?

Answer. No, sir.

Question. Did you take a great interest in the progress of machinery that was erecting in Syracuse at that time?

Answer. I did some considerable.

Question. Did Emmons take pains to show you his machine as it progressed?

Answer. He did.

Question. Did he show you any successful machinery or contrivance for planing or jointing plank or boards, or for tongueing or grooving boards or plank?

Answer He did not.

Question. Were all his experiments and efforts failures, or otherwise?

Answer. I think they were failures. They were abandoned for the purpose for which they were got up.

Question. If he had constructed and put in operation any machine or machinery which would have planed or jointed plank or boards, at Syracuse, would you have known it?

Answer. I think I should.

Question. Have you seen the machine called the Woodworth patent machine, now in operation at Syracuse by Kinyon, for planing boards?

Answer. I have seen the machine you refer to.

Question. When did you first see a machine like that in operation at Syracuse?

Answer. There was a similar one in the old oil mill at Syracuse, some twelve or fifteen years ago.

Question If you had seen such a machine in Syracuse in 1823 or 1824, for any of the purposes for which it is now used, would you have been likely to have remembered it, or allowed it to have escaped your knowledge?

Answer. I think I should have remembered it, and I think there was not any.

H. YOUNG.

Subscribed and sworn to before me, this twenty-seventh day of August, 1849.

JAMES R. LAWRENCE,
Judge of Onondaga county, State of New York.

The witness being cross examined by the defendant in person, testifies as follows:

Question. How was this carriage moved through the machine? Was it upon ways like the saw mill carriage?

Answer. Similar to that; it was moved by what we call a pinion wheel, with cogs, under the carriage, upon rollers.

Question. How was it guided?

Answer. By the top of the frame underneath the carriage; the top of the timber was the flange.

Question. Did it move through on a straight line?

Answer. Yes, sir, I think it did.

Question. Can you say whether the knives on the cylinder had two edges; and if so, for what purpose?

Answer. I think they had but one.

Question. Was the cylinder used in combination with this carriage?

Answer. I think it was.

Question. Can you say whether the motion of the cylinder was with or against the carriage?

Answer. I cannot; I don't recollect.

Question. What was the difficulty which prevented the operation?

Answer. Wherever there was the least piece of cross-grain, it would tear out, so as to spoil the joint from being true.

Question. In case the motion of the cylinder had been with the motion of the carriage, would it, or would it not, have cut with the grain, so as not to tear out those places?

Answer. I think it would not.

Question. Would the motion with the grain be as likely to tear those places as if the motion was against the grain?

Answer. It strikes me it would not be quite as likely; but I think there would be places in every board that that machine would spoil the joint.

Question. Would the Woodworth machine be liable to the same objection?

Answer. I don't think it would.

H. YOUNG.

Subscribed and sworn before me, this 27th day of August, 1849.

JAMES R. LAWRENCE,
Judge of Onondaga county, State of New York.

The said Jacob Hausenfratz being duly sworn, testifies as follows:

I live in the town of De Witt, county of Onondaga, and State of New York; am fifty-six years of age; a farmer by occupation.

Question. Were you acquainted with Uri Emmons at Syracuse in 1823 and 1824?

Answer. I was; I lived at Syracuse at that time.

Question. Were you familiar with the machine built by him for Henry Gifford, for jointing plank for salt vats at Syracuse; if so, describe the machine?

Answer. I was familiar with that machine; it was built opposite of, and within six or eight rods of, where I lived; saw it ten to twenty times a day, probably, on an average. I think exhibit (A,) hereto annexed, and now shewn me, is a fair representation of the machine about as it was; I am sure it is; I am not a mechanic.

Question. Did you see the machine in operation?

Answer. I saw him try the machine; saw it in operation; it did nothing; it tore the edges of the board to pieces, and when it came to a knot or cross grain it would tear it out.

Question. Were there any top pressure rollers used upon the top of the plank to hold the plank down?

Answer. I think there were not.

Question. Was the cylinder located in the machine, as represented in figure 1 of exhibit A?

Answer. It was.

Question. Was the carriage and plank that was clamped together traversing above or below the cylinder?

Answer. I think the cylinder was over the plank, but I can't be certain; I mean that the plank moved above the cylinder, and the knives ran under the plank. I misunderstood the question.

Question. Did you have frequent conversations with Emmons about the machine.

Answer. I did.

Question. Did he abandon the machine as useless for the purposes contemplated?

Answer. He did.

Question. Did you hear Emmons say he could not make the machine perform the jointing operations as he contemplated?

Answer. I don't recollect as I ever did.

Question. Did you ever see any other machine built by Emmons than that you have described?

Answer. No, sir.

JACOB HAUSINFATZ.

Subscribed and sworn to before me, this 27th day of August, 1819.

JAMES R. LAWRENCE,
Judge of Onondaga county, New York.

The further examination postponed until to-morrow morning at nine o'clock.

JAMES R. LAWRENCE,
Judge of Onondaga county, N. Y.

The said Henry Gifford being duly sworn, testifies as follows: I reside in Syracuse, in the county of Onondaga, and State of New York; am forty-seven years of age; am a coarse salt manufacturer by occupation. I knew Uri Emmons in 1823 and 1824; he professed to be a machinist, an inventor. I applied to him to know if a machine could not be constructed to joint the edges of plank for salt vats, and he explained how he thought it could be done with a cylinder with knives and rotary motion. I made an arrangement with him, and he went to work, superintending the building of a machine; he commenced in the fall of 1823.

Question. Look at the drawing now produced to you, marked exhibit A, and say whether it is a correct representation of the machine he made.

Answer. I think it is.

Question. Did he make any other machine for the purpose of planing boards, or for jointing the edges. In your answer make a full explanation of what he did.

Answer. He did not in Syracuse. This machine was finished and tried; it did not do any thing for the purpose intended. Figure 1 in the drawing is a sectional view of the machine he made. Letter (a) on the drawing in this figure is the frame, 42 feet long; (b) on the drawing is the carriage in which the boards were placed edgewise for jointing. Letter (d) in the drawing represents the friction rollers on which the edge of the board rested when put into the carriage. Letter (C) represents the cylinder, being two feet in diameter and about two feet long. Letter (O) represents the ends of the knives attached to the cylinder by screws and set screws, being 12 knives in number. Letter (F) represents the pinion wheel that drives the carriage. Figure (2) on the drawing represents an outside view of figure (1), shewing the way the cylinder is attached to the moving power and pinion which drives the carriage. Figure (3) on the drawing represents the plan or top view of the machine, with the boards placed in the carriage, and the screws to confine the boards in the carriage are represented by the character (×). Letter C in this figure represents the cylinder on which are the knives at letter (O). Letter (B) the carriage; letter (d) the rollers; letter (N) the belt that drives the pinion; letter (W) the groove on the top of the frame of the machine in which the carriage rack run to guide the carriage, as it ran back and forth. The carriage was about 15 inches high.

Question. Were there any top pressure rollers?

Answer. None.

HENRY GIFFORD.

Subscribed and sworn to before me, this 28th day of August, 1849.

J. R. LAWRENCE,
Judge of Onondaga county, N. Y.

This witness being cross-examined by the defendant, testifies as follows:

Question. How long were the knives to the Emmons' machine?

Answer. The same as the length of the cylinder which I have before described.

Question. Was the carriage as wide as the cylinder was long?

Answer. A little wider; furring was put on the inside of the carriage to keep the boards within the length of the cylinder.

Question. Were the boards held firmly by the screws?

[Answer.] They were held firmly by the screws after clamps were put on the top of the carriage to keep it from spreading.

Question. What is the difference in principle in planing a number of edges held firmly together, as shewn in the drawing, and planing the surface of the board itself?

Answer. I should not suppose there would be any difference.

Question. Can you say, of your own knowledge and experience, whether the machine shewn in the drawing, marked exhibit (A), combined the curve of the cylinder and the plane or tangent in which the carriage moved?

Answer. Yes; I saw the machine work.

HENRY GIFFORD.

Subscribed and sworn to before me, this 28th day of August, 1849.

JAMES R. LAWRENCE.
Judge of Onondaga county.

The witness being re-examined by the plaintiff, testifies as follows:

Question. Did the material to be operated upon move with or against the cutting edges in Emmons' machine?

Answer. With the cutting edges.

Question. How did the work look that was attempted to be jointed by the machine.

Answer. It presented an uneven surface.

HENRY GIFFORD.

Subscribed and sworn to before me, this 28th day of August, 1849.

JAMES R. LAWRENCE.
Judge of Onondaga county.

And I do further certify, that the preceding depositions of Henry Young, Jacob Hausinfratz, and Henry Gifford, were reduced to writing by me respectively, and signed by them respectively; and that I am not of counsel, solicitor, or attorney, for either of the parties to the said suit; nor am I interested in the event thereof. I further certify, that the drawing marked exhibit (A) was exhibited to the said witnesses respectively, on their said examination before me, and is the drawing referred to them in their testimony.

JAMES R. LAWRENCE,
Judge of Onondaga county, N. Y.

STATE OF NEW YORK,
Onondaga county, Clerk's office, ss:

I certify, that the honorable James R. Lawrence was, at the dates of the foregoing depositions, judge of the county courts in and for the said county of Onondaga, duly elected and sworn, and that full faith and credit are to be given to his official acts in that capacity; and I further certify, that the several signatures to the foregoing papers purporting to be his are genuine.

In testimony whereof I have hereunto set my hand, and affixed the [L. S.] seal of said county, and of the courts thereof, this 31st day of August, 1849.

V. W. SMITH, *Clk.*

STATE OF NEW YORK.
Onondaga county, ss:

I, James R. Lawrence, county judge of said county, do certify the foregoing attestation of V. W. Smith is in due form; that he is the clerk of said county, and the seal thereto affixed is the county seal of said county and his seal of office.

JAMES R. LAWRENCE.

SYRACUSE, August 31, 1849.

I certify, that the fees for taking of the foregoing testimony are by the law of the State of New York as follows, viz:

Drawing 4 summons for witnesses, fol. 2 each, *a* 28c.	$2 24
Engrossing same, *a* 14c.	1 12
Signing same, *a* 12c.	0 48
Taking depositions, fols. 28, *a* 28c.	7 84
Engrossing same, *a* 12c.	3 36
Certifying one exhibit, 25c.	0 25
Administering 3 oaths	0 37½
Copy of dpn's for pl'f, *a* 6c.	1 68
Do. certificate of authentication by county clerk, fol.	0 28
Engrossing same	0 14
Cl'k sign. and seal. same	0 25

Clerk's certif't, fol. 1, and engr. - - - - -	$0 42
Judge signing 3 certificates - - - - - -	0 50
	$18 69

JAMES R. LAWRENCE,
Judge of Onon'a co., N. Y.

[For drawing see page 71 of the original.]

Deposition of W. P. N. Fitzgerald.

I, Wm. W. Seaton, mayor of the city of Washington, in the District of Columbia, certify, that on the 13th day of September, 1849, before me personally appeared W. P. W. Fitzgerald, of lawful age, a witness produced on the part of the plaintiff in a suit depending in the circuit court of the United States, for the eastern district of Pennsylvania, in which Jacob P. Wilson is plaintiff, and Daniel Barnum is defendant; and the said W. P. N. Fitzgerald being by me first carefully examined, and cautioned, and sworn to testify the truth, the whole truth, and nothing but the truth, did, in answer to the several interrogatories and cross interrogatories propounded to him, depose as follows, to wit:

Question. What is your age?

Answer. I am upwards of forty years of age.

Question. What is your profession?

Answer. I am one of the principal examiners of patents in the U. S. Patent office.

Question. Whose duty is it in the Patent office to pass upon the novelty of invention for pending applications?

Answer. When an application is referred to an examiner, he usually examines it and decides upon the questions of novelty presented. His decision is subject to a revision by the Commissioner of Patents, but the commissioner seldom interferes with the decision of the examiner.

Question. Did the Commissioner of Patents overrule or interfere with the examiner in the issue of the patent dated the 13th March, 1849, to Daniel Barnum?

Answer. I do not recollect that he did.

Question. Who passed that claim in that application?

Answer. I passed it.

Question. Was it your intention, when you passed upon the claim of Barnum, that the thing patented therein was an independent invention and machine, and that it did not interfere with the Woodworth patent?

Answer. I passed Mr. Barnum's claim because I thought the combination covered by it differed sufficiently from what was found in other machines to justify the allowance of the claim; but I did not take into consideration the question, whether the use of Barnum's machine would or would not infringe the claims in the Woodworth patent, the decision of the last question not being within the jurisdiction of the Patent office. A combination may be clearly patentable, and yet the use of that combination may be an infringement of the claims in previously existing patents. For example: a patent may be granted for the combination of A and B; after the grant of this patent, the combination may be improved by another person by adding C to the combination, and thereby become entitled to a patent for the combination of A, B, and C. This last combination may be clearly patentable, but the patentee cannot use it without using the combination of A and B, and thus infringing the previous patent. The question in the case above supposed, whether letters patent shall be granted for the combination A, B, and C, is a question for the Patent office to decide; but the question whether this combination can be used without infringing the pre-existing patent, is a question exclusively for the courts to decide, and one over which the Patent office has no jurisdiction. When the applicant claims the same thing which is claimed in a pre-existing patent, notice thereof is given to the applicant; but as a general rule in such case, a formal declaration of interference, in order to give the parties an opportunity to prove priority of invention, is not given, unless the party desires it.

W. P. N. FITZGERALD.

Cross questioned by the defendant in person.

Question. *Was* you a chief examiner of the Patent office, and did you act as such on the amended specification or patent granted to W. W. Woodworth, on the 8th of July, 1845, as administrator to William Woodworth?

Answer. I was one of the chief examiners at that time, and acted on the re-issue of the Woodworth patent.

Question. In the examination of the specification and claims of said amended patent, and passing them at your bureau, did you consider the invention or improvements which they describe and claim, as a mere combination of particular instruments which were old and common to the public for the purpose described, or did you consider them as covering any and all combinations of instruments capable of performing the same result when driven by power?

(The plaintiff objects to this question, it having already been settled by the Supreme Court.)

Answer, (taken subject to the objection.) It is impossible for me to recollect, at this distance of time, the precise views I had of the subject at the time I examined the application, but the claims which I then allowed present the views I then entertained.

Question. Would a re-issue of that patent [have] been approved at your bureau for a combination of a curvilinear cut and its tangent or plane, or was such a claim warranted by the original patent of 1828, or understood by you as having been allowed in the amended patent of 1845?

(This question and the answer thereto objected to by plaintiff, on the ground that it is not embraced in the order of the court under the feigned issue.)

Question. From your knowledge of the state of the arts, would a patent have been properly granted in 1828 for the combination of a rotating cutter with a traversing board?

Answer. In my opinion, at that time a patent could not have been granted for the combination of those elements alone, without pressure.

(The above question and answer objected to by plaintiff.)

Question. By whom was the cylinder invented and used? Please state where the evidence is found.

Answer. A cylinder for dressing boards is found in the description of a machine said to be invented by Bentham upwards of fifty years ago, and reported in the Repertory of Arts.

Question. Was a combination of circular saws, for cutting tongues and grooves, known to the arts before 1828?

Answer. Circular saws were known for that purpose prior to 1828, but when they began to be used or known in combination I do not recollect, and have not the means by me of ascertaining.

Question. Can you state by whom the disc was invented?

Answer. The first disc cutter that I recollect for planing was the Bramah disc. His machine is reported in the Repertory of Arts, 2d volume, 2d series, page 165, and in a somewhat modified form in Rees' Encyclopedia.

Question. Was there any means of holding the material down, and did it reduce to a thickness?

Answer. I think there were means for holding the material at the edges, and there were cutters called roughers for reducing, and smoothing cutters also described.

Question. Please state whether, as mechanical instruments independent of all combinations, the rotating cylinder, as described in said Woodworth's patent, and the disc, as described in Barnum's patent, are substantially different.

Answer. They are substantially different.

Question. Please state whether, as mechanical instruments, independent of all combinations, the circular saw and the cutter wheel, as described in Woodworth's patent, are substantially different.

Answer. They are different, but have also strong points of resemblance.

Direct examination resumed.

Question. Have the Woodworth machine and the Barnum machine, as described, both got rotating planes for planing?

Answer. They have; one has a cylindrical rotating cutter, and the other a disc rotating cutter.

Question. Are circular saws cutter wheels?

Answer. That would depend upon the force given to the term cutter wheel; a circular saw is in some sense a cutter wheel, but not such a one as is used in the Woodworth machine; I do not think a circular saw would ordinarily be called a cutter wheel.

W. P. N. FITZGERALD.

And I, the said W. W. Seaton, further certify, that the said testimony of the said W. P. N. Fitzgerald was by him subscribed in my presence, after the same was by me in his presence reduced to writing. That I am not of counsel or attorney to either of the said parties, nor interested in the event of said cause, and that the defendant appeared in person and cross examined the said witness; and I further certify, that the said deposition is taken to be used in the suit aforesaid, and that the cause of taking the same is, that the said W. P. N. Fitzgerald was at a greater distance than one hundred miles from the place of trial of the said suit.

In testimony whereof I have hereunto subscribed my name, and caused the seal of the Corporation of Washington to be affixed, the day and year above written.

[L. S.]

W. W. SEATON, *Mayor*.

Attest: WM. J. McCORMICK, *Register*.

Cost of the deposition seal, $12.

Commission to Washington, D. C.

The circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, of October session, 1849.

Jacob P. Wilson, a citizen of Pennsylvania,
vs.
Daniel Barnum, a citizen of the State of New York.
} No. 6.

In equity, April session, 1849.

The President of the United States, to Francis A. Dickens, esq.

Know ye, that in confidence of your prudence and integrity, we have given unto you, and by these presents do give unto you, full power and authority, in pursuance of a rule lately made in the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, in a certain suit in equity therein depending, wherein the said Jacob P. Wilson is complainant, and the said Daniel Barnum is respondent, to call before you, at a certain day and place by you for that purpose to be appointed, all and every person and persons who may be named to you by the said respondent as witnesses in the said action; and then and there to examine them, on their respective oath or affirmation, on certain interrogatories hereunto annexed, touching the premises, and to reduce their testimony to writing; and when you shall have so done, you are to send the same to the said circuit court, closed up, and under your seals, plainly and distinctly set, together with this writ.

Witness the honorable Roger B. Taney, chief justice of the Supreme Court of the United States, at Philadelphia, this tenth day of September, A. D. 1849, and in the seventy-fourth year of the independence of the United States.

[L. S.]

GEORGE PLITT,
Clerk of circuit court.

JACOB P. WILSON
vs.
DANIEL BARNUM.
No. 6.

In the circuit court, U. S., of April session, 1849. Sur feigned issue.

Interrogatories to be addressed to witnesses, to be produced, sworn or affirmed, and examined on the part of the defendant:

Interrogatory 1st. What is your age and profession or business? Are you acquainted with the science of mechanics? If aye, state fully your opportunities of having acquired a knowledge thereof.

Interrogatory 2d. Do you know the machine and machinery patented to William Woodworth in 1828, called the Woodworth Planing Machine, and the amended patent therefor, issued in 1845, to W. W. Woodworth? Describe the said machine as patented. Have you read the specifications to said patents?

Interrogatory 3d. Do you know the machine and machinery patented to Daniel Barnum in 1849, called Barnum's Planing Machine? Describe the same. Have you read the specification to said patent? Have you seen the model of the same, and the drawings accompanying said patent?

Interrogatory 4th. Does the said machine of Barnum's, either as described in his specification, or shown by his model and the said drawings, infringe upon the said amended patent to Woodworth, in 1845, or the rights thereby secured? Is it substantially the same as, or different from, said Woodworth's patented machine?

Interrogatory 5th. If you answer the first section of the preceding interrogatory in the negative, be good enough to state fully, as if minutely and particularly interrogated, your reasons for said opinion. You will please enter into an analysis of the parts and principles of each of the said machines, to compare or contrast them; and to state in detail the process of mechanical demonstration upon which your judgment is founded. Please direct your attention to that part of the claim in the amended specification of W. W. Woodworth, of 1845, which relates to the planing apparatus, and state whether the "rotating plane" described in Woodworth's said specification, and the rotating disk described in Barnum's specification, are or are not substantially different in principle. Please describe the construction, motion, and action of each; are or are not the rollers, described in said specification of 1845, by Woodworth, and the fence gauge, and eccentric clamps described in the said specification of Barnum, (or either of them,) substantially different in principle? Please describe the construction, motion, and action of each; are or are not the said fence gauge and eccentric clamps mechanical devices analogous to the said rollers, so claimed by Woodworth? Can or cannot rollers, or any analogous device, be used in Barnum's Planing Machine, in combination with the whole or any of its parts, as a substitute for his fence gauge and clamps, or either of them, without spoiling the board put into the machine?

Interrogatory 5th. Please state from your mechanical knowledge, experience, and judgment, whether a tongueing and grooving machine, which cuts out the tongue by four thin saws, two of each placed at right angles, above and below the tongue; and the groover by two thin saws, side by side, upon the same spindle, with cutters for jointing the edges of the parts above and below, the groover affixed to the collars which hold the saws which cut the groove, the board being held and fed by rollers, is or is not an infringement upon the said amended paten t to Woodworth, of 1845, is substantially the same or different from the said Woodworth's patent machine?

Interrogatory 7th. If you answer the first section of the preceding interrogatory in the negative, be good enough to state fully, as if minutely and particularly interrogated, your reasons for said opinion; you will please enter into an analysis of the parts and principles of each of the said machines; to compare and contrast the means used in each to produce corresponding results, and to state in detail the process of mechanical demonstration upon which your judgment is founded. Please direct your attention to that part of the claim in the said amended specification of 1845 which relates to the tongueing and grooving apparatus, and state whether the invention therein claimed, and the machine described in the last preceding interrogatory, are mechanically alike or unlike;" are or are not the cutter wheels, so claimed by Woodworth, and the arrangement of saws so described, substantially different?

Interrogatory 8th. Please direct your attention to those parts of said amended specification of 1845 which relates to reducing the board to a width, and to the tongueing and grooving cutter wheels, and state whether jointing cutters are or are not described therein, or included in the claim of invention at the conclusion thereof; are there, or are there not, any means or tools described therein for that purpose; and whether or not the grooving cutters, described and claimed in the said specification, can or cannot "reduce the board or plank to an exact width throughout?" Can you or can you not state from your mechanical knowledge and judgment, whether the terms employed in said specification describe or claim jointing cutters, to reduce the board to a width, or any means or tools for that purpose, as a part of the invention of said Woodworth, as set forth therein?

W. L. HIRST, *Def'ts Att'y.*

1849, Sept. 8th. A true copy from the orignal filed.

J. BURCHARD, *for clk. circt. ct.*

JACOB P. WILSON }
vs. } No. 12.
DANIEL BARNUM. }

C. C. U. States. Sur feigned issue, October session, 1849.

Cross interrogatories to be administered to witnesses produced on part of defendant.

1. What is your precise place of business?

2. If you answer the second interrogatory in chief in the affirmative, state when you first saw the machinery patented by William Woodworth, and when you first read the specification in said patent.

3. Are you a practical mechanic? If aye, when, where, and how, have you been so employed?

4. If you answer the third interrogatory in chief affirmatively, state when you first saw the machinery patented to Daniel Barnum. When did you first read the specification in his patent—when and where did you see a model thereof—was there, or was there not, in the model exhibited to you, any roller used for any purpose whatever—when and where did you last see said model, and who exhibited it to you?

5. If you answer the fourth interrogatory in chief that the Barnum machine does not infringe upon the Woodworth machine, state clearly and fully what you understand and mean by the word infringement. What do you understood to be the principle of the Woodworth planing machine, and what that of the Barnum machine?—what mechanical forces are used in each to produce the result of planing the board?

6. If, *an* answer to any of the interrogatories in chief, you state that the Woodworth machine and the Barnum machine are in the whole, or any of their parts, substantially unlike, state particularly in what sense you use such word substantially—whether in reference to forms or principle; and, if the latter, state minutely in what it is that the principle of the two said machines differ.

7. What would be the effect of the knife upon the board in the Barnum machine, if the board were not kept in its place by the guides fitting the tongue and groove of the board—what is the object and purpose of the guides in the Barnum machine?

8. What is the object or purpose of the inclined fence, or bed, against which the board is placed in the Barnum machine, while undergoing the action of the knife; and what would be the effect of making the fence, or rest, a single plane, parallel in all its length to the face of its planing wheel—what is the object of the roller, if any, placed at the point of meeting of the two inclined planes?

9. What, in expressing your opinion as to the dissimilarity of the two machines, do you understand to have been invented by Woodworth, and what by Barnum?

10. What kind of cutting instruments does Barnum use for tongue-

ing and grooving? Describe them particularly. For what purpose does he use pressure rollers in connection therewith?

SIDNEY V. SMITH, *for Pltff.*

1849. Sept. 8. A true copy from the original filed.

J. BURCHARD,
For Cl'k circuit court.

WILSON
vs. } No. 6.
BARNUM.

C. C. U. States, E. D. Pa. Sur feigned issue, April S., 1849.

It is agreed that the commissioners, Thos. Allen Clarke, of New Orleans, Francis A. Dickens, of Washington, Charles Ingersol, of New Haven, and Alex. Gardiner, of New York, shall, at the conclusion of the cross interrogatories, ask the following questions in behalf of the plt'ff and def't:

"Do you know, or can you set forth, any other matter or thing which may be a benefit or advantage to the parties at issue in this cause, or either of them, or that may be material to the subject of this your examination, or the matters in question in this cause? If yea, set forth the same fully and at large in your answer.

WM. W. HUBBELL, *for Def't.*
SIDNEY V. SMITH, *for Plt'ff.*

The depositions of witnesses produced, sworn, and examined, on the second day of October, in the year A. D. eighteen hundred and forty-nine, at the office of Francis A. Dickens, in the city of Washington and District of Columbia, before Francis A. Dickens, acting as commissioner by virtue of a commission issued from the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, of October session, 1849, to the said Francis A. Dickens directed, for the examination of witnesses in a certain cause depending in the said court, wherein Jacob P. Wilson is plaintiff, and Daniel Barnum is defendant.

Walter R. Johnson, being produced, sworn, and examined on behalf of the defendant, Daniel Barnum, deposeth as follows:

Answer to 1st query. My age is fifty-five years; my profession that of a civil and mining engineer, and professor of mechanical and chemical science. My opportunities of becoming acquainted with the science of mechanics have been a careful study of them as a department of university education, having been long engaged in teaching the principles of mechanics and natural philosophy to students, of engineering, or in practising them as an engineer, having been for nine years Professor of Mechanics and Natural Philosophy in the Franklin Institute of the State of Pennsylvania; during which time, and subsequently,

JACOB P. WILSON
vs.
DANIEL BARNUM.
No. 12.

C. C. U. States. Sur feigned issue, October session, 1849.

Cross interrogatories to be administered to witnesses produced on part of defendant.

1. What is your precise place of business?

2. If you answer the second interrogatory in chief in the affirmative, state when you first saw the machinery patented by William Woodworth, and when you first read the specification in said patent.

3. Are you a practical mechanic? If aye, when, where, and how, have you been so employed?

4. If you answer the third interrogatory in chief affirmatively, state when you first saw the machinery patented to Daniel Barnum. When did you first read the specification in his patent—when and where did you see a model thereof—was there, or was there not, in the model exhibited to you, any roller used for any purpose whatever—when and where did you last see said model, and who exhibited it to you?

5. If you answer the fourth interrogatory in chief that the Barnum machine does not infringe upon the Woodworth machine, state clearly and fully what you understand and mean by the word infringement. What do you understood to be the principle of the Woodworth planing machine, and what that of the Barnum machine?—what mechanical forces are used in each to produce the result of planing the board?

6. If, *an* answer to any of the interrogatories in chief, you state that the Woodworth machine and the Barnum machine are in the whole, or any of their parts, substantially unlike, state particularly in what sense you use such word substantially—whether in reference to forms or principle; and, if the latter, state minutely in what it is that the principle of the two said machines differ.

7. What would be the effect of the knife upon the board in the Barnum machine, if the board were not kept in its place by the guides fitting the tongue and groove of the board—what is the object and purpose of the guides in the Barnum machine?

8. What is the object or purpose of the inclined fence, or bed, against which the board is placed in the Barnum machine, while undergoing the action of the knife; and what would be the effect of making the fence, or rest, a single plane, parallel in all its length to the face of its planing wheel—what is the object of the roller, if any, placed at the point of meeting of the two inclined planes?

9. What, in expressing your opinion as to the dissimilarity of the two machines, do you understand to have been invented by Woodworth, and what by Barnum?

10. What kind of cutting instruments does Barnum use for tongue-

246

ing and grooving? Describe them particularly. For what purpose does he use pressure rollers in connection therewith?

SIDNEY V. SMITH, *for Pltff.*

1849. Sept. 8. A true copy from the original filed.

J. BURCHARD,
For Cl'k circuit court.

WILSON
vs. } No. 6.
BARNUM.

C. C. U. States, E. D. Pa. Sur feigned issue, April S., 1849.

It is agreed that the commissioners, Thos. Allen Clarke, of New Orleans, Francis A. Dickens, of Washington, Charles Ingersol, of New Haven, and Alex. Gardiner, of New York, shall, at the conclusion of the cross interrogatories, ask the following questions in behalf of the plt'ff and def't:

"Do you know, or can you set forth, any other matter or thing which may be a benefit or advantage to the parties at issue in this cause, or either of them, or that may be material to the subject of this your examination, or the matters in question in this cause? If yea, set forth the same fully and at large in your answer.

WM. W. HUBBELL, *for Def't.*
SIDNEY V. SMITH, *for Plt'ff.*

The depositions of witnesses produced, sworn, and examined, on the second day of October, in the year A. D. eighteen hundred and forty-nine, at the office of Francis A. Dickens, in the city of Washington and District of Columbia, before Francis A. Dickens, acting as commissioner by virtue of a commission issued from the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, of October session, 1849, to the said Francis A. Dickens directed, for the examination of witnesses in a certain cause depending in the said court, wherein Jacob P. Wilson is plaintiff, and Daniel Barnum is defendant.

Walter R. Johnson, being produced, sworn, and examined on behalf of the defendant, Daniel Barnum, deposeth as follows:

Answer to 1st query. My age is fifty-five years; my profession that of a civil and mining engineer, and professor of mechanical and chemical science. My opportunities of becoming acquainted with the science of mechanics have been a careful study of them as a department of university education, having been long engaged in teaching the principles of mechanics and natural philosophy to students, of engineering, or in practising them as an engineer, having been for nine years Professor of Mechanics and Natural Philosophy in the Franklin Institute of the State of Pennsylvania; during which time, and subsequently, I had occasion, as a member of a committee on inventions, and of a committee of science and the arts, to examine many inventions, both before and after they were patented; having at different periods been devoted to the publication, either as author or editor, of numerous works pertaining to mechanical science, or to the performance of experiments of research in mechanics, and having been professionally engaged in preparing papers for the procuring of patents for myself and others in the United States and other countries.

Answer to the second query. I am well acquainted with the machine and machinery patented to William Woodworth in 1828, called the Woodworth planing machine. I am also acquainted with the patent issued to W. W. Woodworth in 1845, after the original patent had been extended. The Woodworth planing machine, of which I have read the specification, both of the original and the re-issue patent, is essentially composed of, 1st, "a cutting roller," similar to that of which a description is found in the Repertory of Patent Inventions, vol. x, p. 302–3, for 1793. This cutting roller revolves on an axis which may be either vertical or horizontal. In the first model which I saw, it was vertical, and the board was made to pass by the side of it edgewise, by means of a reciprocating carriage, moved by a rack and pinion. The knives on the cutting roller are set so as to follow each other as truly as may be, and their edges are intended to work at such a distance from a bench, or (in the case of planing the axis of the cutting roller vertical) from an upright side of the frame in which the roller revolves, as to leave between the bench, or side, as the case may be, and the edges of the cutters the thickness of the board after being planed, and it is the office of the cutters on the cutting roller to remove all the excess of timber above the prescribed thickness of the finished board. The knives, or cutters, act upon and remove the timber by a motion analogous to that of the common adze, and may be termed, by way of distinction from other tools which effect the purpose of planing, the dubbing plane. Every cutter on the planing cutting roller (of Bentham) is intended to be arranged in the same manner as every other, so that all may cut equally deep into the board; and when this accurate adjustment is not obtained, the machine is liable to leave ridges extending across the breadth of the board, and from the very action of the cutters, combined with the advance motion, such ridges will always be left. Every cutter in the cutting roller is compelled to act the part both of a roughing, or jacking, and a smoothing plane. There is no succession of operations at every stroke of every cutter on the roller; a portion of the work must be both begun and finished. As the board advances, each successive tooth, knife, or cutter, on a cutting roller, must form a new curved cavity, extending across the board, and must leave a ridge between it and the next preceding cavity. The height and distance apart of the ridges must depend on the relation between the velocity of revolution of the roller and that of the advance motion of the board as it goes through the machine. If the original rough surface of the board, or any part to be cut away, happen to contain materials which dull the cutters, their action as smoothing cutters is thereby impaired, and the cutters must at once be sharpened, or the work will be left more or less imperfect. It is probably for this reason, and on account of the ridges left across the board. that the work done by cutting rollers, or dubbing planes, is not regarded as sufficiently perfect to receive paint and varnish, and in floors requires frequently the hand smoothing plane to make a proper surface after being laid down.

2d. The tongueing and grooving in the Woodworth machine are performed by cutting rollers also, as well as the planing; the groove is cut by a single series of teeth or cutters, which, by revolving against the edge of the board, take out a groove equal in width to the thickness of the teeth or cutters. (The action of grooving is performed as described by General Bentham, at page 299, vol. 10, of the Repertory of Arts and Manufactures, in which he says, that "to cut a parallel sliding groove or channel, you have only to make the circular saw, or, (to use the name I call the tool by, whenever its effect depends upon a degree of thickness greater than necessary to give it strength,) the circular cutter of the thickness requisite to form the breadth of the groove, the depth being determined as before, by the height of so much of the cutter as projects above the bench." The tongueing is performed by two such cutters placed (as also mentioned by Bentham) on one and the same axis, at a distance apart equal to the thickness of the tongue; each cutter or circle of cutters in this case, instead of cutting a groove, cuts a rebate; that is, a half groove, on either side of the tongue.

In the model of the Woodward machine, which I saw in 1828, the board was, to the best of my recollection, kept in place by means of a spring, and the carriage, when one board had been finished, returned to receive another. I have seen the Woodworth machine at work, but they have in every instance had the cutting roller for planing placed with its axis horizontal, and the tongueing and grooving cutter wheels with their axis vertical. This arrangement of several cutters to work simultaneously on different sides of the same piece, is described by Bentham, at page 304, of the 10th volume of the Repertory of Arts and Manufactures, where he says, "cutters may be applied to different sides of a piece at once, and such of them as make parallel cuts may be mounted on the same spindle."

The cutters which, in the Woodworth machine, form the tongue, are both mounted on the same spindle. The model of the Woodworth machine, exhibited to me in 1828, had stancheons or stakes to guide the boards into and out of the machine; but having no bearings at their upper ends, they did not serve the purpose of holders to the boards while passing the cutters.

I have seen the patent, including the specification and drawing, as it was granted to William W. Woodworth, having had frequent occasion to examine it while in the prosecution of my professional business with the Patent office.

In the description of this patent are contained two or three features not contained in the original patent of William Woodworth, and not belonging to the machine as I saw it in 1828. In the latter the board, plank, or other materials, were to be reduced to a width by circular saws or "friction" wheels, as the case may be; and as the patent was designed for facing and dressing brick, and cutting mouldings on or facing metallic, mineral, or other substances, as well as planing boards, it was evident that friction wheels, not circular saws, were necessary for the earthy and mineral substances. Bentham's patent contemplated the application of his invention to all the same purposes. In the patent of 1845, the term reducing wheels is introduced instead of friction wheels. By the term friction wheel, as used in the original patent, I understand that with reference to the stone, brick, &c., the circular saw used for slitting timber was to be replaced by a circular wheel, the edge of which being left without teeth, was intended to be used with sand and water to slit up stone, brick, &c. This friction wheel is not a reducing wheel in any other sense than a circular saw is a reducing wheel. Both the friction wheel and the circular saw are described as means of slitting up materials, wood, or stone, &c., as the case may be, into uniform breadths, not of reducing those breadths after the materials had been slit up. Nothing was exhibited or said to me by William Woodworth in 1828 about "reducing wheels consisting of revolving cutter wheels," as described in the patent of 1845, adjustable like the circular saws, and his tongueing and grooving cutters had then no means of reducing the board to a uniform breadth; that all depended on the circular saw. In the patent of 1845, the wheel, which in 1828 is called a rotary cutting wheel, has been denominated a rotary cutting, or planing and reducing wheel, and it is also denominated a planing cylinder. The next circumstance which I would note, as one in which the patent of 1845 differs from that of 1828 is, that in that of 1845 it is said that "the grooving and tongueing cutters, at the same time and by the same operation, reduce the board or plank to an exact width throughout." Nothing of this appears in the patent of 1828; the only means of reducing boards and planks to uniform width, as exhibited at that time, were the circular saws, and for stones, &c., "friction wheels;" these friction wheels are commonly iron disks, such as are used to cut metal, stones, or glass.

The next circumstance in which the patent of 1845 differs from that of 1828 is, that whereas in the latter only a "carriage" was mentioned, or used, as the means of conveying the boards [or] plank through the machine, in the former (that of 1845) there is mentioned "an endless chain passing around drums or chain wheels," and "geared friction wheels borne up against it;" and it is also stated, that to cause the carriage and plank to move forward readily, there may be friction rollers †, †, †, placed horizontally, and extending under them. The feature of geared friction rollers to carry forward the board in a planing machine was, according to the best of my knowledge and belief, first known and used by Uri Emmons, in his planing machine, patented in 1829. His invention made the Bentham, alias Woodworth machine, greatly superior to what it had been under prior arrangements, since it enabled one board to follow immediately after another, without loss of time, such as had occurred while the board had been carried forward by a carriage, which carriage had to return empty every time a new board was to be inserted.

Having thus described the two machines, the one patented to William Woodworth in 1828, and the other to William W. Woodworth in 1845, I will state, in further explanation of the said patents, that one of the claims first set up by William Woodworth—that of the application of circular saws " for reducing floor plank and other materials to a width," was formally disclaimed during his lifetime; that in the patent itself of 1828, he expressly disclaims the invention of " circular saws," or " cutter wheels;" and that of the remaining part of the claim of 1828, none is retained in the patent of 1845; but that, instead of them, three new claims are set up, two of which depend on combinations of the Bentham cutters, with the so-called pressure rollers, which appear to have been borrowed from Uri Emmons, and the third is founded on planing, tongueing, *tongueing* and grooving at one operation, applying for that purpose cutter wheels, as described by Bentham, to different sides of a piece at the same time.

Answer to the third interrogatory. I am acquainted with the machine and machinery, patented to Daniel Barnum in 1849, called Barnum's planing machine. I have read the specification and examined the model and drawings. In the machine of Barnum's, the planing or operating part is a disk wheel, on the general principle of Bramah's wheel, and the cutters are arranged upon the face of said disk, and not, as in the Bentham cutting roller, upon the curved surface or periphery of a cylinder or wheel. Besides the total difference in construction between a Bentham cutting roller and a Bramah wheel, the Barnum machine applies the cutting tools in a manner entirely different; and, instead of making every cutter on the disk to do the same kind of work as every other cutter, there is a distinct office assigned to one set of cutters from that which is performed by another. The cutters near the periphery of the disk of Bramah's wheel have, for their office, to clear the surface and diminish the thickness of the board, while those cutters which are nearer to the centre of the wheel are used for smoothing the already reduced surface. Besides this difference in the part which they *respectfully* remove from the board—one taking away that which is liable to be rough, dirty, and apt to dull the cutting tool, by a sort of hewing motion across the grain of the timber; the other taking off the small remnant of clean wood, by a straight edged knife reaching quite across the board, and cut in the direction of the grain, parallel to the face of the board, which is barely curved toward the cutter wheel sufficiently to avoid scratching the work after it has been finished—the roughing cutters, being set near the periphery of the disk, cut in advance of those which do the smoothing, the latter being nearer the axis; the roughing cutters work across the grain of the timber, chipping or hewing away the surplus wood in a manner analogous to that of axes used in squaring timber; while the finishing cutters, having only clean wood to remove from that part of the board which has a slight curve towards the face of the disk, act upon it throughout its breadth nearly like a draw knife, or common smoothing plane, always moving with the grain of the wood. Barnum's machine, however, has, over the hand smoothing plane, the advantage of leaving no longitudinal ridges, which are apt to occur where a narrow cutting tool is employed in planing.

The Barnum or Bramah cutters are not made to cut upwards from the bench, like the Bentham cutters used by Woodworth. In Barnum's machine the roughing cutters only tend to press the board edgewise, downward, towards the bench, while the smoothing cutters tend to resist the advance motion of the board, in which their effect is overcome by the eccentric clamps with which the board is pushed forward through the machine. There is, consequently, no need of any contrivance to prevent the board from rising up from the bench, which is the alleged reason in Woodworth's claim for using rollers, or analogous devices, as patented by Emmons and incorporated into the patent granted to William W. Woodworth in 1845.

Barnum bends his board at the two ends slightly away from the cutter wheel, leaving them curved towards it at the point where they pass below the axis of said wheel, in order that the part which is passing that point may alone be subjected to the action of the smoothing cutter, and in order that, after once being smoothed, the surface may not again, in its advance motion, come in contact with the face of the disk, and be marked with curved cross stripes or scratches. Pressure rollers and analogous devices could not be employed for this purpose, as no roller could be placed above the board near enough to the centre of the wheel, to take the board after it had passed the centre of the wheel. Any attempt to send the board through the machine in that manner would inevitably cause the front end to be thinned away and spoiled by the back part of the wheel. The manner of bending back the board employed by Barnum is to make it pass over a slightly curved bench, through a pair of bent clamps, which take hold of the tongue and groove previously cut on its edges. As the device of Emmons, used by Woodworth, is not calculated to produce the effect of bending back the ends of the board, so this bending back is not adapted to any machine operating with a cylinder cutter wheel, since it would only tend to exaggerate the ridges already mentioned as being left across the boards. In order to get the advantage of a device analogous to Barnum's for bending a board while passing the cutters, the Bentham machines must have the bend made in the opposite direction; the ends of the board must be bent upwards, leaving a curvature downwards directly under the cutter. This would make the cutter wheel touch tangentially the interior of a curve; and it would even, in that case, be employed for a wholly different purpose from what it is by Barnum—that of preventing curved scratches from being made at the back part of the wheel. The feed motion, patented to Barnum, differs very materially in its construction from anything patented to William Woodworth, or to William W. Woodworth; and the continuous advance motion and bending of the board is secured by eccentric clamps acted upon by connecting rods receiving their motion from grooved cams. These eccentric clamps are so constructed as to increase their pressure and hold upon the board, in proportion to the resistance which it meets in passing through the machine; and by the arrangement of the curvature of the cams, one pair of the eccentric clamps is made to seize the board, and to begin its forward movement before the other lets go its hold, whereby the continuous progressive motion is secured. In the early Bramah machines the smoothing, as well as reducing, cutters were short knives, and were, from acting on a plane surface, liable to leave scratches on the board. Mr. Barnum's long smoothing irons, in combination with his bent bench and grooved guides, obviate this difficulty. His roughing cutters, preceding the smoothing cutters in the time of their action, prevent the liability of the latter being dulled by dirt, sand, or the excessively hard surfaces of dried knots, in the outside of the board; all of which have to be encountered in one direction or another by the cutters of the cutting roller of Bentham, used by Woodworth, whether they cut upward or downward; whether, in the course of their revolution, they cut the clean wood before the dirty, or the dirty before the clean. Should Barnum's roughing cutters, those near the periphery, become a little dull, the smoothing cutters do not of necessity partake of it, and the machine may go on doing its work as long as the smoothing cutters retain a good edge; but, as soon as any one of Woodworth's cutters is dulled, it begins to make bad surfaces.

Answer to the fourth interrogatory. The machine of Barnum, as described in his specification and shown in his model, does not, in my opinion, infringe upon the patent, issued in 1845, to William W. Woodworth. It is substantially different, inasmuch as it is composed of parts which are different, performs its work differently by different successions of operations, and is adapted to produce different and better results. It uses mechanical contrivances, not one of which is described by Woodworth, some of which are not applied to his machine without making its work even worse than at present. It uses no cylinder cutter or "cutting roller" of Bentham, but a disk wheel on the plan of Bramah—this latter operating tool, bearing about the same analogy to the former that a machinist's lap or flat horizontal grinding wheel, for making plane surfaces, does to an old fashioned grindstone, in which the grinding takes place on the edge of the stone, and which necessarily grinds curved cavities in the metal applied to it. It has no occasion for pressure rollers to keep the board from being drawn upward, such as were employed by Emmons, since its mode of applying the cutters is wholly either lateral or longitudinal. It has applied a hewing rather than a dubbing action to the roughing or reducing cutters, and a regular planing action, with a different set of cutters, to the purpose of finishing the work, instead of pressure feeding rollers exercising a constant pressure. Whatever be the amount of work to be done, it uses the eccentric clamps, which graduate their own pressure to the work to be done, and only consume mechanical power according to the necessary resistance to be overcome, and these feed the boards to the machine.

Answer to the 5th interrogatory. The rotating plane, described in the patent to William W. Woodworth, revolves in a curve, describing what is mathematically termed the curved surface of a cylinder; the cutters employed by Barnum revolve in the plain surface of a disk. Woodworth makes no reference whatever to a disk, but in all parts of his description his planing tool is called a planing cylinder; and he says that, when the axes of the planing and reducing wheel stands vertically, the grooving and tongueing wheels are placed one above another, with the plank edgewise between them. This would not and could not be their position if he had contemplated using a disk to reduce and plane the flat surface; for then the tongueing and grooving cutters (if doing their work at the same time with the disk) must be placed one above the other, only where the axes of the disk were laid horizontally. The language in William W. Woodworth's patent, in which the term rotating plane is used, does not therefore mean, and cannot be construed to mean, a plane placed on the face of a revolving disk. When, therefore, in his first claim, William W. Woodworth speaks of "rotating planes, substantially as herein described," he cannot be understood to mean, planes placed on a Bramah wheel, or revolving disk, with cutters so arranged that their cutting edges are coincident with the plane surface of the disk.

Answer to the 6th interrogatory. The four thin saws, two on each side of the board, set at right angles to each other, are not equivalent to cutters for jointing the edges, inasmuch as the four saws would barely take out a rebate or half groove on each side of the edge of the board, without at all affecting its width. When two saws, with cutters on the spindle, are employed, they will have the effect to reduce the breadth of the board by cutting off the edge of the tongue. The use of the four saws, two at right angles with each other, is particularly described, by General Bentham, as a means of forming a tenon or a tongue. In using the circular saws to cut a tongue, the rollers of Emmons are not required to keep the cutters from drawing the board towards the centre of the cutter wheels. In this respect the pressure rollers in the two machines, one having circular saws and the other reducing cutters, are required for different purposes. They are simply required for holding and feeding in the former case, and for preventing lateral motion (which, according to William W. Woodworth's third claim, the tongueing cutters are liable to produce,) in the latter case. The combination is not violated or infringed unless the entire combination of the patent be used. When the reducing operation is to be performed, as well as the tongueing and grooving, the tendency of the cutter wheels is to draw the board *latterly*, and force it towards the centre of the cutter wheels, and to overcome the friction occasioned by the pressure feeding rollers. The pressure rollers are not claimed or used by William W. Woodworth, in combination with circular saws for tongueing boards, but only with tongueing and grooving cutters, which he describes to be also reducing wheels, having the effect to draw the board towards their centre. Both the four circular saws for tongueing, and the pressure rollers for forcing forward materials, being old devices known to every mechanic, may be used either separately or in combination, without infringing on the patent of any one who has not expressly claimed them for a particular use.

Answer to the 7th interrogatory. I have in effect answered this interrogatory in my answers to the preceding, in which I have shown that there is no reducing of the breadth of the board when the tongueing is performed by four thin circular saws, on the plan of Sir Samuel Bentham. I will add, that the thin circular saws have one advantage over the tongueing and reducing cutter wheel, which is, that they are less liable to split off the tongue; which effect may, and not unfrequently does occur, where the cutter wheel is used, and where the board happens to be weak or "shaky" near its edge. The four thin saws remove two small prisms of timber, without any tending to tear away the remaining portions.

Answer to the 8th interrogatory. The tongueing and grooving apparatus are, in William W. Woodworth's patent of 1845, described as "two revolving cutter wheels, one of which wheels is adapted to the cutting of the groove, and the other to the cutting of the two rebates that form the tongue. The grooving wheel consists of a circular plate fixed on an axis, and have cutters attached to it, projecting beyond the periphery of the plate to such distance as is required for the depth of the groove; their thickness may be such as is necessary for its width, and they are so situated as to cut the groove in the middle of the edge of the board, or as nearly so as may be required. The tongueing wheel has cutters on each of its sides, or otherwise, so formed and arranged as to cut the two rebates, which are necessary to the formation of the tongue. This description includes nothing in relation to jointing cutters, or to the means of dressing off the edge of the tongue, or the two edges on the sides of the groove. Following the description of the tongueing and the grooving wheels is a statement to which I have referred in my answer to a preceding interrogatory, viz: that "the grooving and tongueing cutters, at the same time, and by the same operation, reduce the board or plank to an exact width throughout. The claim does not contain any clause mentioning the jointing of boards by the tongueing and grooving cutters, or by any other means." The tongueing and grooving cutters, as described in the specification of William W. Woodworth, could not reduce the board to an exact width throughout. As such jointing machinery did not constitute any part of the original machine, patented in 1828, as the invention of William Woodworth; it could not, even on the supposition that that machine was really of his invention, be included in a reissue. But, however this may be, the specification neither describes nor claims jointing cutters.

WALTER R. JOHNSON.

Sworn to and subscribed before me, this second day of October, 1849.

FRANCIS A. DICKENS, *Commissioner*.

Answer to the 1st cross interrogatory. My present place of business is Washington city, in the District of Columbia.

Answer to 2d cross interrogatory. I first saw the model of William Woodworth's machine, according to the best of my recollection, in the autumn of 1828, prior to the time of his application for a patent. I read a description of it with the claim in the Journal of the Franklin Institute for March, 1829, and am under the impression, though I cannot positively say, that the full specification was shown to me by William Woodworth some time during the year 1829, or early in 1830. The model itself was certainly exhibited and explained to me by him. For a number of years past I have been pretty familiar with the terms of his specification.

Answer to the 3d cross interrogatory. I am in the frequent practice of constructing with my own hands machinery and apparatus, for the purposes of research and illustration in mechanics and other branches of science, and my frequent intercourse with practical mechanics has made me familiar with the tools, implements, and processes of numerous mechanic arts. To this extent, and in this sense, I am a practical mechanic.

Answer to the 4th cross interrogatory. I cannot speak precisely as to the day on which I first saw the model and read the specification of Barnum's machine. I saw it in the Patent office at Washington, and read the specification in the record books of the office, not long after the issuing of his patent. The model was shown to me some time in March or April last, according to the best of my recollection, by the machinist of the Patent office, at my request, at a time when I was engaged in procuring a patent for another person whose invention was supposed to contain some feature in common with that of Barnum. I have seen in the model rollers used in the interior of the cams which set in motion the eccentric clamps that move forward the boards. They are friction rollers, common devices in multitudes of machines, for obviating the resistance from friction. There was in the model no friction roller used in any other part of the machine. I last saw the said model on the 26th of September, 1849, in the Patent office. There is nothing new in applying friction rollers to internal cams.

Answer to the 5th cross interrogatory. I understand by the word infringement the same as is, I believe, commonly understood by it, viz., violation; and I do not understand that the machine of Barnum infringes upon or violates the amended patent of Woodworth, for two reasons, first, that the two machines (those of Barnum and Woodworth) are not alike, as I have fully set forth in my examination in chief; that of Woodworth in particular, acting by means of the cylinder principle, and all its cutting done by cutters, which as they revolve generate in space; cylindrical surfaces doing their work indiscriminately, as roughing and finishing tools at the same time; acting from below upwards, or from within outwards, so as to require great force to keep the board to the bench ; while that of Barnum acts on the disk principle, or true plane of a circle, does its rough cutting by one set of tools, and its finishing by another set; the latter moving in such direction as to finish their work by sweeps of a cutter moving in a plane, and parallel or nearly so, [with] the grain of the wood, the tendency of the strokes of the tools being not to lift the board from its bed, but merely to press it edgewise, or endwise. The mechanical forces used in each to produce the result of planing the board, may be any mechanical force at the command of the operator. The force of steam, the force of water, or the force of animals, and the force of these prime movers, may be transmitted in any of the well known means of transmitting forces through machinery to operating tools; the action of such forces being modified by the respective arrangements and devices for that purpose. My second reason for saying that the Barnum machine does not infringe on or violate the amended patent to William W. Woodworth in 1845, is, that that machine, not having been invented by William Woodworth, and covering ground not covered by the patent issued to him for his alleged invention in 1828, (as I have more particularly pointed out in my examination in chief,) and the said machine of 1828 being only the application of well known devices to a well known purpose, and producing effects long previously well known, is, in fact, in all its parts and incidents, a portion of the public domain, and was so in 1845; and, consequently, cannot in a legal sense be infringed or violated, any more than it can be in a mechanical sense, by the entirely dissimilar arrangements and effects of Barnum's machine.

Answer to the sixth cross interrogatory. I have pointed out in my examination in chief the parts (and they are essential parts) in which I consider the two machines to differ; the differences are so substantial as to refer not only to the form, (in which they are wide apart,) but to the kinds of implements used, to the succession of operations, to the directions of their actions, to the mode of holding the materials while acted on, to the manner of supplying the materials or feeding the tools, and to the condition in which they respectively leave the finished work. In this latter particular the difference is such, that while Barnum's machine may with strict propriety be called a planing machine, that of Woodworth would, in reference to such work as it ordinarily performs, be more properly called a roughing machine.

Answer to the 7th cross interrogatory. The effect of the knife upon the board in the machine of Barnum, if the boards were not guided, would be that when the board had reached the back periphery of the disks, it would be there struck by the cutters, and though not raised edgewise, would be marked and scored, so as to mar its surface, previously made smooth, by passing the finishing cutters. The object of the inclined fence is to avoid this running against the return cutters, keeping the board from straightening itself by the elasticity of the timber. If the fence were a single parallel plane, the effect would be to reduce the action of Barnum's machine to the condition of Bramah's, on which this feature of the curved fence is a principle, and an important improvement. I have never seen a roller placed at the point of meeting of the two inclined planes of Barnum. If one were placed there, it would serve the same purpose as a friction roller does under a common saw mill carriage, or as a friction roller does in any other mechanical operation, and that is to diminish friction while passing over the bend. The guide gauges, and the bench or fence, together maintain the uniform curvature of the board while passing by the finishing cutters.

Answer to the 8th cross interrogatory. I have in the above answer to the 7th interrogatory, answered by anticipation the 8th, and have nothing further to add.

Answer to the 9th cross interrogatory. I do not understand Woodworth to have invented any thing. From my earliest knowledge of the planing machine bearing his name, to the present time, I have not been able to learn that he invented either circular saws, cutting rollers, grooving cutters, tongueing cutters, pressure rollers, the use of cutters on two or more sides of a piece at the same time, or any other device ascribed to him in the patent of 1845. I understand Barnum to have invented the feeding apparatus described in his patent, for feeding by a combination of double cones, eccentric clamps and rockers, for producing a uniform, continuous, and parallel feed motion, without rollers, rack, and pinions, endless chains, or any common device previously known or used for a similar purpose; I also understand his invention to embrace the fence, and analogous device against which to spring a board in combination with screw clamps, with suitable means of taking hold of the edges while it is on [the] fence, so as to present a moderate length only of the board to the action of the finishing cutters, and the combination of the same with a disk and long cutters, which may finish the work with the grain of the wood.

When I speak of what Barnum has invented, I would be understood to mean what Barnum and Wells have invented, as the patent, though issued to Barnum alone, is the result of the joint invention of Barnum and Wells.

Barnum's patent does not describe any particular kind of instrument for tongueing and grooving, and as I have never seen one of his machines in operation, I can give no information in regard to his practice in this particular.

WALTER R. JOHNSON.

Sworn to and subscribed before me, this second day of October, 1849.

FRANCIS A. DICKENS,
Commissioner.

In answer to the interrogatory, do you know, or can you set forth, any other matter or thing which may be a benefit or advantage to the parties at issue in this cause, or either of them, or that may be material to the subject of this your examination, or the matters in question in this cause? If yea, set forth the same fully and at large in your answers.

I reply, that in Sir Samuel Bentham's first patent, bearing date Nov. 26, 1791, of which the specification is published in the fifth volume of the London "Repertory of arts and manufactures" at page

303, it is said, that "in case of very thin boards, where, though you keep down the edges in manner above mentioned, the middle may notwithstanding be apt to rise; there may be heavy rollers, or rollers loaded with weights, let through the sides of the plane, as near the iron as may be, and on one or both sides of it. In this manner, without any great additional consumption of moving force, the board however thin, may be effectually kept down flat upon the bench."

It is evident that these "heavy rollers, or rollers loaded with weights" for keeping a board to its bench while undergoing the process of planing, must have been intended to possess a power to move vertically, or to exert their gravitating force upon the board, independently of the pressure of the plane stock upon the surface of the board; for if the rollers spoken of had been intended to be fastened in the stock of the plane so as not to have any vertical motion, the pressure of the rollers upon the board could not have kept it to the bench. Placing weights upon the top of the plane stock, or making the stock itself very heavy, would have produced just as good an effect as rollers thus arranged, that is no effect at all; while the rollers, with an independent vertical pressure, would accomplish the keeping of boards to the bench; and there is, no conceivable advantage in using rollers at all, so far as keeping down the board is concerned. The only point requiring inventive power is that of keeping a board to its bench while undergoing the operation of planing, by means of rollers placed near to, and on one or both sides of the cutting tool, as above stated; this was the invention of Bentham, and though, in his second patent, in which he describes the "cutting rollers," he does not repeat what he has said in regard to keeping a board to its bench, yet the association or combination of the two evidently required no inventive talent; since the application of a pressure roller within a moving plane stock presents, practically, more difficulty than the application of weighted rollers, one on each side of a "cutting roller."

The combination of a pressure roller, with arrangements for feeding by means of rollers instead of a carriage, and both with the "cutting rollers," appears to have been the invention of Uri Emmons. The manner of keeping a board to its bench while being planed, by means of rollers placed either before or behind the plane iron, or both, is the invention of Bentham. WALTER R. JOHNSON.

Sworn to and subscribed before me, this second day of October, in the year 1849.

FRANCIS A. DICKENS,
Commissioner.

I, the undersigned, do hereby certify to the honorable the district court of the United States, in and for the eastern district of Pennsylvania, third circuit, that by virtue of the annexed commission to me directed, I proceeded to examine, at my office in the city of Washington, under oath, by me administered, Walter R. Johnson, the only witness produced by the defendant in the suit of Jacob P. Wilson vs. Daniel Barnum; and I do also certify, that the last annexed pages, numbered from one to twenty-nine, inclusive, are the answers of the said witness, Walter R. Johnson, to the annexed interrogatories, being written and delivered to me by himself; all which, together with the commission, I return herewith to your honorable court. I further certify, that I have myself been sworn before N. Callan, (who is authorized to administer oaths, to execute this commission.

Witness my hand and seal, this third day [of] October, in the year of our Lord eighteen hundred and forty-nine.

FRANCIS A. DICKENS, [SEAL.]
Commissioner.

Commission to New Orleans, La.

39.

In the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, of October session, 1849.

JACOB P. WILSON, a citizen of the State of Pennsylvania,
vs. — No. 6.
DANIEL BARNUM, a citizen of the State of New York.

In equity, Apr. session, 1849.

The President of the United States, to Thomas Allen Clarke, esq., New Orleans, La.

Know ye, that in confidence of your prudence and integrity, we have given unto you, and by these presents do give unto you, full power and authority, in pursuance of a rule, lately made in the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, in a certain suit in equity therein depending, wherein the said Jacob P. Wilson is complainant, and the said Daniel Barnum is respondent, to call before you, at a certain day and place by you for that purpose to be appointed, all and every person or persons who may be named to you by the said respondent, as witnesses in the said action; and then and there to examine them, on their respective oath or affirmation, on certain interrogatories hereunto annexed, touching the premises, and to reduce their testimony to writing; and when you shall have so done, you are to send the same to the said circuit court, closed up, and under your seals, plainly and distinctly set, together with this writ.

Witness the honorable Roger B. Taney, chief justice of the Supreme Court of the United States, at Philadelphia, this tenth day of [L. S.] September, A. D. 1849, and in the seventy-fourth year of the independence of the said United States.

GEORGE PLITT,
Clerk of circuit court.

The execution of this commission appears in a certain schedule hereto annexed.

2468.

I certify the examination was conducted as appears therein, all the interrogatories and cross interrogatories having been severally put to the witness, and severally answered under oath as therein set forth.

THOS. ALLEN CLARKE, [L. S.]
Commissioner.

JACOB P. WILSON }
vs. } No. 6.
DANIEL BARNUM. }

In the circuit court, U. S., of April sessions, 1849. Feigned issue.

Interrogatories to witnesses to be produced, sworn or affirmed, and examined on behalf of the defendant, sur commissioned to New Orleans.

Interrogatory 1st. What is your age and profession, or business—are you acquainted with the science of mechanics? If aye, state fully your opportunities of having acquired a knowledge thereof.

Interrogatory 2d. Do you know the machine and machinery patented to William Woodworth in 1828, called the Woodworth planing machine, and the amended patent therefor issued in 1845? Describe the said machine as patented. Have you read the specification to said patent?

Interrogatory 3d. Do you know the machine and machinery patented to Daniel Barnum in 1849, called Barnum's planing machine? Describe the same. Have you read the specification to said patent—have you seen the said machine as used by him, the said Daniel Barnum, at Snowden's buildings, in Southwark, Philadelphia? Describe the same.

Interrogatory 4th. Does the said machine of Barnum, either as described in his specification, and shown in the model and drawings, or as used by him as aforesaid, infringe upon the said amended patent to Woodworth, in 1845, or the rights thereby secured—is it substantially the same as, or different from, said Woodworth's patented machine.

Interrogatory 5th. If you answer the first section of the preceding interrogatory in the negative, be good enough to state fully, as if minutely and particularly interrogated, your reasons for said opinion. You will please enter into an analysis of the parts and principles of each of the said machines separately, to compare or contrast them; and state in detail the process of mechanical demonstration upon which your judgment is founded. Please direct your attention to that part of the claim in the amended specification of W. W. Woodworth, of 1845, which relates to the planing apparatus; and state whether the rotating plane described in Woodworth's specification, and the rotating disk described in Barnum's, are or are not substantially different in principle. Please describe the motion, construction, and action of each. Are or are not the rollers described in the said specification of 1845, by Woodworth, and the fence, gouges, and eccentric clamps, described in the said specification of Barnum, or either of them, substantially different in principle? Please describe the motion, construction, and action of each. Are or are not the said fence, gouge, and eccentric clamps of Barnum mechanical devices analogous to the said rollers so claimed by Woodworth? Can or can not rollers, or any analogous device, be used in Barnum's planing machine, in combination with the whole or any of its parts, as a substitute for his fence, gouges, and clamps, or either of them.

Interrogatory 6th. Do you know, have you seen and examined, the tongueing and grooving machine used by Mr. Barnum at Snowden's building aforesaid? Please describe the same, and state whether the same infringes upon the said amended patent to Woodworth of 1845. Is it substantially the same, or different, from said Woodworth's patented machine?

Interrogatory 7th. If you answer the first section of the preceding interrogatory in the negative, be good enough to state fully, as if minutely and particularly interrogated, your reasons for said opinion. You will please enter into an analysis of the parts and principles of each of the said machines; to compare and contrast the means used in each to produce corresponding results; and to state in detail the process of mechanical demonstration upon which your judgment is founded.

Interrogatory 8th. Have you seen both the machines—the planing machine and the tongueing and grooving machine—in use by the said Barnum at said Snowden's buildings? Were they separate or in combination—were they actually, or by any mechanical law, in combination with each other? Please direct your attention to that part of the claim in the said amended specification of 1845 which relates to the tongueing and grooving apparatus, and state whether the invention therein claimed, and the said tongueing and grooving machine used by Mr. Barnum, are mechanically alike or unlike? Are or are not the cutter wheels for tongueing and grooving claimed by Woodworth, and the arrangement of saws so used by Mr. Barnum, substantially different?

Interrogatory 9th. Please direct your attention to those parts of the said amended specification of 1845 which relates to reducing the board to a width, and to the tongueing and grooving cutter wheels as described; and state whether jointing cutters are or are not described therein, or included in the claim of invention at the conclusion thereof. Is there or is there not any means or tools described therein for that purpose. And also, whether or not the grooving and tongueing cutters described and claimed in the said specification can or can not reduce the board or plank to an exact width throughout. Can you or can you not state, from your mechanical knowledge and judgment, whether the terms employed in said specification describe or claim jointing cutters, or any other tools for that purpose, as a part of the invention of said Woodworth therein set forth? W. L. HIRST, *Deft's Att'y.*

1849. Sept. 8th. A true copy from the original filed.

J. BURCHARD,
For Clk. circuit court.

Cross interrogatories to be administered to witnesses to be produced on part of defendant.

1. Where is your precise place of business?

2. If you answer the second interrogatory in chief in the affirmative, state when you first saw the machine patented to William Woodworth, and when you first read the specification in said patent.

3. Are you a practical mechanic? If aye, when, where, and how long have you been so employed?

4. If you answer the third interrogatory in chief affirmatively, state when you first saw the machinery patented to Daniel Barnum. When did you first read the specification in his patent—when and where did you see a model thereof? Was there or was there not in the original machine, or in the model exhibited to you, any roller used for any purpose whatever? If so, where was such roller or rollers placed—for what purpose was it or they employed—and when did you last see said machine or model—who exhibited [it] to you, and where?

5. If you answer the fourth interrogatory in chief that the Barnum machine does not infringe upon the Woodworth machine, state clearly and fully what you understand and mean by the word infringement and the word principle, as applied to a machine. What do you understand to be the principle of the Woodworth planing machine, and what that of the Barnum machine—what mechanical forces are used in each to produce the result of planing the board?

6. If, in answer to any of the interrogatories in chief, you state that the Woodworth machine and the Barnum machine are in the whole, or any of their parts, substantially unlike, state particularly in what sense you use such word substantially; whether in reference to form or principle; and, if the latter, state minutely in what it is that the principle of the said two machines differ.

7. What would be the effect of the knife upon the board in the Barnum machine, if the board were not kept in its place by the guides fitting the tongue and groove of the board—what is the object and purpose of the guides in the Barnum machine?

8. What is the object and purpose of the inclined fence, or bed, against which the board is placed in the Barnum machine, while undergoing the action of the knife; and what would be the effect of making the fence, or rest, a single plane, parallel throughout its entire length to the place of the planing wheel, and to the cutting action of the knives? What is the object of the roller, if any, placed at the point of meeting of the two inclined planes forming the rest, and behind the board to be planed?

9. In expressing your opinion as to the dissimilarity of the two machines, what do you understand to have been invented by Woodworth, and what by Barnum?

10. What kind of cutting instruments does Barnum use for tongueing and grooving? Describe them particularly. To what purpose does he use pressure rollers in connection therewith? Can Barnum by

his machine plane a board, without its first having been tongued and grooved? Is not the tongueing and grooving machine essential to the planing operation? What would be the difference in principle and mode of operation, if the two machines used by Barnum should be joined together? Is not the operation of the one just as much dependent upon that of the other, in their present state of separation, as it would be if they were joined together?

SIDNEY V. SMITH, *for Pl'ff*.

1849, September 8. A true copy from the original filed.

J. BURCHARD,
For clk., circuit court.

WILSON }
vs. } No 6.
BARNUM. }

Circuit court, United States, eastern district of Pennsylvania. Sur feigned issue. April S., 1849.

It is agreed, that the commissioners, Thomas Allen Clarke, of New Orleans, Francis J. Dickens, of Washington, Charles Ingersoll, of New Haven, and Alexander Gardiner, of New York, shall, at the conclusion of the cross interrogatories, ask the following question on behalf of the plaintiff and defendant.

"Do you know, or can you set forth, any other matter or thing which may be a benefit or advantage to the parties at issue in this cause, or either of them, or that may be material to the subject of this your examination, or the matters in question in this cause? If yea, set forth the same fully and at large in your answer.

SIDNEY V. SMITH, *for plt'ff*.
WM. W. HUBBELL, *for def't*.

Deposition of William W. Wood, a witness produced, sworn, and examined, on the twenty-seventh day of September, in the year of our Lord one thousand eight hundred and forty-nine, in the parish of West Feliciana, State of Louisiana, by virtue of a commission issuing from the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, to Thomas Allen Clarke, esquire, New Orleans, Louisiana, directed for the examination of witnesses in a certain cause depending in said court; wherein Jacob P. Wilson, a citizen of the State of Pennsylvania, is complainant, and Daniel Barnum, a citizen of the State of New York, is respondent.

William W. Wood, a witness on behalf of defendant, being duly sworn, deposeth and saith in answer to the first interrogatory:

His age is thirty-one years and upwards; an engineer by profession; is acquainted with the science of mechanics; from the age of fifteen has been continually employed in the practical application of mechanics; commenced the pursuit in the West Point Foundry, where he remained, off and on, about ten years; subsequently was employed in the direct manufacture and setting up of machinery in the West Indies and coal mines of Virginia; engaged in setting up steam engines and heavy machinery in Alabama and South Carolina; for the last five years have been in the service of the United States at several navy yards, and superintending (at the large foundries having the contracts for building) the erection of the engines of two of the large steamers, now building for the Navy Department, the "Saranac" and "San Jacinto;" now holds a commission as chief engineer in the service of the United States; now has a leave of absence from the Navy Department, and is engaged in the superintendence of the erection of a large steam sugar apparatus upon the estate of William H. Baum, esquire, in this parish.

II. To the second interrogatory he answers and saith: Am acquainted with the machine and machinery of William Woodworth, patented in 1828, called the Woodworth Planing Machine, and the amended patent issued in 1845; has read the specification to said patent, and now produces and annexes a copy of the same marked (A.) The machine of Woodworth has a cylinder revolving rapidly, having cutters fixed upon its periphery, which, in its revolution, is brought in contact with the board to be planed, passing beneath, and moved and held firmly by pressure rollers, the action of the cutters upon the boards being that of the adze. In the same frame there are cutter wheels used for tongueing and grooving the boards simultaneously with the operation of planing; all of which are driven by bands working upon drums, by which the motion is communicated to the cutting instruments.

III. To the third interrogatory he answers and saith: Is acquainted with the machine and machinery patented to Daniel Barnum, in 1849, called Barnum's Planing Machine, and has read the specification to said patent, and now produces and annexes a copy of the same, marked B. In the machine of Barnum the board is caused to moved forward by reciprocating feeding clamps worked by cambs, and in its motion forward is brought in contact with a vertical rapidly revolving disk, having upon its periphery gouges, by which the board is first reduced, preparatory to being operated upon by cutters attached to the face of said disk. The board, in passing through the machine by means of an arrangement called a fence and guide strips, is caused to deviate slightly from a straight line, by which means the cutting gouges are prevented from reoperating upon the surface after the work is finished by the smoothing cutters. I have seen the said machine, as used by the said Daniel Barnum, at Snowden's building in Southwark, Philadelphia. It is the same as just described.

IV. To the fourth interrogatory he answers and saith: The said machine of Barnum, (in my opinion,) as described in his specification, and shown in the model and drawings, or as used by him as aforesaid, does not infringe upon the said amended patent to Woodworth, of 1845, or the rights thereby secured. The machine of Barnum differs from that of Woodworth as far as one machine could differ from another, and produce the same effect. I consider it essentially different from Woodworth's patented machine.

V. To the fifth interrogatory he answers and saith: The reason of my opinion, as expressed in my answer to the fourth interrogatory, is that the parts and principles of the one machine are dissimilar to those of the other. In order to move forward and confine the board in the Woodworth machine, while undergoing the operation of planing, rollers, between or beneath which the board passes, are used; in the Barnum machine eccentric clamps are used, which are in no wise analogous to rollers. In the Woodworth machine the effect of the rotating knives upon the cylinder operating upon the board, being to draw the board forward and up, or to lift up the board. In the Barnum machine the action of the cutters being to move the board edgeways (not lifting) in the same place in which the knives revolve, thus proving the different application and effect of the cutting features, as operating diversely to each machine. In the Woodworth machine the board to be planed moves in a straight line through the machine, the plane of the board being subjected to the successive rapid, curvilinear finishing cuts; in contradistinction to this, in the Barnum machine, the board does not move in a straight line, and is subjected first to the action of the reducing gouges followed by the finishing knives, which from their difference of action produce not a curvilinear cut, but a cut parallel to and in the line of their own motion, which is a perfect plane and attached to a disk, instead of a cylinder, which involves in no wise the principle of the cylinder. When the mechanical expression of cylinder is used, nothing implying a disk could be understood.

The guide strips or screw clamps used in the Barnum machine, cannot be analogous to the pressure rollers of the Woodworth machine, nor are they used for the same purpose, viz., to prevent the boards from being drawn upwards, but used to produce and to maintain that relation between the board and cutters, causing the peculiar effect wrought by the combination of the curved position with the action of the roughing gauges and finishing cutters upon the face of the disk. In mechanical language, the principle of the roller being rotary, or revolving upon their own axis, and the screw clamps or gauges, a mechanical device (having no motion) to control the forward motion of the board, given by reciprocating feeding clamps. The reciprocating motion governing the clamps and the rotating motion governing the roller. (In explanation.) True, the motion of reciprocating is produced by a rotary motion; but the one producing the other does not make them the same. The rotary motion imparted to the wheel of a steamboat is produced by the reciprocating piston moved in a steam cylinder, and it is quite unnecessary to add, that the piston and cylinder themselves do not rotate—the two systems being mutually dependent. I consider the rollers described in the specification of Woodworth of 1845, and the fence gouges and eccentric clamps described in the specification of Barnum, are substantially different in principle. Neither rollers, or any analogous device, can be used in Barnum's planing machine in combination with the whole or any of its parts, as a substitute for his fence, gouges, and clamps, or either of them.

VI. To the sixth interrogatory he answers and saith: I do know and have seen and examined the tongueing and grooving machine used by Mr. Barnum at Snowden's buildings. A circular cutting instrument, having teeth the thickness that is desired to make the groove in the edge of the board and having the teeth or cutters formed upon its periphery, together with a series of circular saws used for sawing out, or so arranged to saw out the material necessary to be removed in forming the tongue. These instruments were operating in a frame through which the board to be tongued and grooved was made to pass previous to its being planed, and not connected with the planing machine before described as that of Barnum's. The same does not infringe upon the amended patent of Woodworth of 1845. It is substantially different from said Woodworth's patented machine.

VII. To the seventh interrogatory he answers and saith: In the tongueing and grooving apparatus attached to the machine of Woodworth, cutters for tongueing and grooving the boards to be planed are fixed upon rapidly revolving cutter heads, capable of being adjusted so as to form the tongue and groove necessary to be formed upon the edges of the board in the same machine, previous to their being acted upon by the cylinder used for planing. In the tongueing and grooving apparatus of Barnum there are no adjustable cutters, such as described in the Woodworth machine, but arbitrary cutters, possessing in no wise the adjusting feature of the Woodworth cutter. In proof of my assertion I refer to the strips of wood sawn out from the edges of the board in the process of tongueing, and the arbitrary cutter used, possessing no adjustable feature for tongueing such as is claimed by Woodworth.

VIII. To the eighth interrogatory he answers and saith: I have seen both the planing and the tongueing and grooving machine in use by Mr. Barnum at Snowden's building. They were separate; they were not in combination with each other, either actually or by any mechanical law. The invention claimed in the specification of Woodworth, of 1845, of the tongueing and grooving apparatus, is mechanically unlike the tongueing and grooving machine of Mr. Barnum. The cutter wheels for tongueing and grooving, claimed by Woodworth, and the arrangement of saws used by Mr. Barnum, are substantially different.

IX. To the ninth interrogatory he answers and saith: In that part of the amended specification of the Woodworth patent of 1845, which relates to reducing the board to a width, and to the tongueing and grooving cutter wheels, as follows: "The grooving and tongueing cutters, at the same time and by the same operation, reduce the board or plank to an exact width throughout." Such I maintain to be impossible with such tongueing wheels as described and explained in the specification which I have read, inasmuch as, in the description and explanation for the grooving wheel, cutters are only used to form the groove and none to act on the fair edge of the board, to form the joint upon the grooved edge. The specification further says: "The plank or boards which are to be planed, tongued, and grooved, are first to be reduced to a width by means of circular saws, by reducing wheels, or by any other means. When circular saws are used for this purpose, two such saws should be placed upon the same shaft on which they are to be made to stand at any required distance apart. Under these the board or plank is to be forced forward and brought to the width required." By which I understand that the means employed by Woodworth, in his specification alluded to for reducing boards or planks to exact parallel width, previous to being planed, to be, as stated in the specification, by circular saws, adjusted, revolving, and fixed upon the same shaft. No allusion is made to "jointing cutters," in the specification of 1825, unless by the term "any other means." There are no means or tools described in said amended specification of 1845, for the purpose of reducing the boards to a width, except circular saws. The tongueing and grooving cutters, as described in said amended specification of 1845, cannot reduce the board to a uniform width. From my mechanical knowledge and judgment I state, that the terms employed in said amended specification do not describe "jointing cutters," or any other tools for that purpose than circular saws, as a part of the invention of Woodworth as therein set forth; but they claim "reducing wheels" and "any other means" for reducing the board to a uniform width.

WM. W. W. WOOD.

Cross interrogatories.

I. To the first cross interrogatory he answers and saith: My precise place of business I cannot state, unless it is at the plantation of Col. Baum, in this parish, where I am temporarily employed. Being in the service of the Government, when on duty, my place of business is wherever I am ordered. I have no permanent location.

II. To the second interrogatory he answers and saith: The first cylinder planing machine which I ever saw, and which I think was Woodworth's, was in the city of Baltimore, somewhere about 1835 or 1836, and perhaps later. It was operating in the establishment of Hewlin & Woolen. Subsequently, I have seen a number of machines of Woodworth's patent. I first read the specification of said patent in the month of May last, (1849.)

III. To the third cross interrogatory he answers and saith: I am a practical mechanic, and have been so employed as I have stated in the answer to the first direct interrogatory. I have made with my own hands machinery, and more recently have put up, and superintended the putting up, and construction of complicated machinery.

IV. To the fourth cross interrogatory he answers and saith: I first saw the planing machine, patented to Daniel Barnum, in May last, (1849,) at Snowden's building, in the city of Philadelphia. I then read, for the first time, his specifications to his patent. The first time I ever saw a model of his machine was in the court-room of the United States court at Philadelphia, during the trial of a case of the present plaintiff vs. the defendant—I think during the latter part of May last. Neither in the planing machine which I saw at Snowden's, nor in the model, was there, that I recollect, any roller except friction rollers, neither the cambs. The rollers used were for the purpose of diminishing the friction of working the clamps by the means of the cambs. The last time I saw Barnum's machine was some time after the injunction in Wilson's case vs. Barnum was granted. I cannot say when; it was at Snowden's buildings. I have not seen the model since I saw it in the court-room, as I have before stated.

V. To the fifth cross interrogatory he answers and saith: I understand by the word *infringement* the using of similar arrangements already patented and claimed as new without the consent of the patentee, or embodying the principle of a combination upon which a patent has been based, either directly or indirectly. By *principle*, as applied to machines, I understand the peculiarity of the application of known mechanical powers and principles to produce a given result. Though there may be several principles in a machine, according to the relation in which it is received, yet the peculiar principle is that combination upon which its action depends, in which it differs from all others. I understand the principle of the Woodworth machine to be the employing of cutters or knives placed upon the periphery of a cylinder, which is rapidly revolving in combination with pressure rollers for moving the board forward in a straight line, and with the adjustable rapidly revolving knives or chisels for tongueing and grooving the boards fixed upon cutter heads, at one and the same operation. I understand the principle of the Barnum machine to be, instead of a cylinder and the employing of knives only for planing, the application of a vertical cutting disk, armed with knives and gouges—the latter preparing the board for the action of the former —and the employing of guiding strips or screw clamps, to cause the board to diverge from a straight line while undergoing the operation of planing; and, instead of pressure rollers to force the board forwards, eccentric clamps are used for that purpose, there being no such combination of mechanical principles or features present in the one existing in the other; and in the other, and in the tongueing and grooving apparatus used by Barnum, the employing saws and arbitrary cutters instead of the adjustable cutters used by Woodworth. The mechanical forces in each machine are the employing bands, drums, and pullies, by which the cylinders, cutting disks, and instruments employed in each machine are made to revolve rapidly, armed with cutting instruments, in contact with the board to be wrought.

VI. To the sixth cross interrogatory he answers and saith: I use the word "substantially" both as regards form and principle. I have stated, in my answer to the fifth cross interrogatory, the different principles which constitute the dissimilarity of each of the machines of Barnum and Woodworth.

VII. To the seventh cross interrogatory he answers and saith: The effect of the knife upon the board in the Barnum machine, if the board were not kept in its place by the guides, would be to work upon a board which was not held firm in its place by the guides, and to destroy the surface, and doing away with one of the features of the machine which characterizes it from the Woodworth, by permitting the board to resume the straight line, as in the Woodworth; by which means, as before stated, the face of the board would be destroyed—the maintaining, by the use of the guide strips, the curve instead of the straight line, being absolutely necessary in planing.

VIII. To the eighth cross interrogatory he answers and saith: The object and purpose of the inclined fence or bed is to serve in holding the board firmly in the proper position to be maintained while undergoing the process of planing. The effect of making the fence or rest a single plane parallel, as inquired of, would be, if the guide strips were slacked up, to cause the board to move forward in a straight line, and injure its surface. The object of the roller, such as alluded to, if placed at that point, would be to diminish the friction of the board passing over its surface.

IX. To the ninth cross interrogatory he answers and saith: I understand the invention of Woodworth to be the employment of the cylinder, with cutters attached, in combination with the pressure rollers and the adjustable cutting instruments, for tongueing and grooving boards at one and the same operation. I understood Barnum's invention to be the employment of a disk, with gouges and cutters affixed, in combination with guiding strips and the curved fence, for the purpose of causing the board to deviate from a straight line while undergoing the operation of planing, and further in combination with the eccentric clamps, for causing the board to move forward in the machine.

X. To the tenth cross interrogatory he answers and saith: The instrument of Barnum for grooving, he uses, is a circular steel plate, with cutters formed upon the edge—the width of the groove to be cut; and for tongueing he employs, I think, four circular saws, for sawing out and forming the tongue; then all fixed in a frame through which the board is drawn by means of rollers, and in its progress is brought in contact with the cutting instruments just explained. The pressure rollers are used to cause the board to move through the machine. Barnum cannot, by any arrangement which I have seen existing in his machine, plane a board without its being first tongued and grooved. The tongueing and grooving is essential to the planing operation. The mechanical principles existing in the two machines would still exist, were they combined. The mode of operation in the two machines would not be changed, if they were combined. The same instrument used for tongueing and grooving would still tongue and groove, and the features of the planing machine would not be changed. I think that the operation of the one is quite as much dependent upon that of the other in their present state, as it would be if they were joined together.

Last and general interrogatory propounded to the witness by plaintiff and defendant, and put to him pursuant to the agreement annexed.

To this interrogatory he answers and saith: He knoweth not.

WM. W. W. WOOD.

Sworn and subscribed before me.

THO. ALLEN CLARKE, *Com.*

Exhibit A, 1.

WM. W. W. WOOD.
THOS. ALLEN CLARKE,
Commissioner.

The United States of America, to all to whom these letters patent shall come:

Whereas William W. Woodworth, administrator of William Woodworth, deceased, of Hyde Park, N. Y., has alleged that said William Woodworth invented a new and useful improvement in machines for planing, tongueing, and grooving, and dressing boards, &c., for which letters patent were granted, dated the 27th day of December, 1828, which letters patent have been extended (as will appear by the certificates appended thereto, copies of which are hereunto attached,) for fourteen years from the expiration of said letters patent, and which letters patent are hereby cancelled on account of a defective specification, which he states has not been known or used before said William Woodworth's application; has made oath that he is, and that said William Woodworth was, a citizen of the United States; that he does verily believe that said William Woodworth was the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the treasury of the United States the sum of fifteen dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said William W. Woodworth, in trust for the heirs at law of said W. Woodworth, their heirs, administrators, or assigns, for the term of fourteen years from the twenty-seventh day of December, one thousand eight hundred and twenty-eight, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said William W. Woodworth, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, [SEAL.] and the seal of the Patent office has been hereunto affixed.

Given under my hand at the city of Washington, this eighth day of July, in the year of our Lord one thousand eight hundred and forty-five, and of the independence of the United States of America the seventieth.

JAMES BUCHANAN,
Secretary of State.

Countersigned and sealed with the seal of the Patent office.

HENRY H. SYLVESTER,
Acting Commissioner of Patents.

Exhibit A, 2.

WM. W. W. WOOD,
THOS. ALLEN CLARKE,
Commissioner.

The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern: Be it known, that the following is a full, clear, and exact description of the method of planing, tongueing, and grooving plank or boards, invented by William Woodworth, deceased, and for which letters patent of the United States were granted to him on the 27th day of December, in the year one thousand eight hundred and twenty-eight; the said letters patent having been surrendered for the purpose of describing the same invention and pointing out in what it consists, in more clear, full, and exact terms than was done in the original specification.

Amended specification.

The plank or boards, which are to be planed, tongued, or grooved, are first to be reduced to a width by means of circular saws, by reducing wheels, or by any other means. When circular saws are used for this purpose, two such saws should be placed upon the same shaft, on which they are to be capable of adjustment, so that they may be made to stand at any required distance apart: under these the board or plank is to be forced forward, and brought to the width required; this apparatus and process do not require to be further explained, they being well understood by mechanicians.

When what has been above denominated reducing wheels are used, these are to consist of revolving cutter wheels, which resemble, in their construction and action, the planing and reducing wheel to be presently described; these are to be made adjustable like the circular saws; but the latter are preferred for this purpose. The plank may be reduced to a width on a separate machine.

When the plank or boards have been thus prepared, (on a separate machine,) they may be placed on or against a suitable carriage resting on a frame or platform, so as to be acted upon by a rotary cutting, or planing and reducing wheel—which wheel may be made to revolve either horizontally or vertically, as may be preferred. The carriage which sustains the plank or board to be operated upon, may be moved forwards by means of a rack and pinion, by an endless chain or band, by geared friction rollers, or by any of the devices well known to machinists for advancing a carriage or materials to be acted upon in machines for various purposes. The plank or board is to be moved on towards the cutting edges of the cutters or knives, on the planing cylinder, so that its knives or cutters, as they revolve, may meet or cut the plank or board in a direction contrary to that in which it is made to advance, the edges of the cutters are in this method prevented from coming first into contact with its surface, and are made to cut upwards from the reduced part of the plank towards said surface; by which means their edges are protected from injury by gritty matter, and the board or plank is more evenly and better planed than when moved in the reverse direction. (Ex. A, 3.)

After the board or plank passes the planing cylinder, and as soon or fast as the planing cylinder has done its work on any part of the board or plank, the edges are brought into contact with two revolving cutter wheels, one of which wheels is adapted to the cutting of the groove, and the other to the cutting of the two rebates that form the tongue. When the axis of the planing and reducing wheel stands vertically, the grooving and tongueing wheels are placed one above the other, with the plank edgewise between them. When the axis of the planing wheel stands horizontally, these wheels are on the same horizontal plane with each other, standing on perpendicular spindles.

The grooving wheel consists of a circular plate fixed on an axis, and having one, two, three, four, or more, cutters which are to be screwed, bolted, or otherwise attached to it, the edges of which cutters project beyond the periphery of the plate to such distance as is required for the depth of the groove; their thickness may be such as is necessary for its width; they are of course so situated as to cut the groove in the middle of the edge of the board, or as nearly so as may be required. The tongueing wheel is similar in form to the grooving wheel, but it has cutters on each of its sides or otherwise, so formed and arranged as to cut the two rebates which are necessary to the formation of the tongue.

Amended specification.

The grooving and tongueing cutters, at the same time, and by the same operation, reduce the board or plank to an exact width throughout. When the axis of the planing wheel is placed vertically, the knives or cutters may be made to plane two planks at the same time; the planks being in this case moved in contrary directions, and so as to meet the edges of the revolving knives or cutters. When the machine is thus constructed, a second pair of grooving and tongueing wheels may be made to operate in the same way with those above described. A machine to operate upon a single plank or board, and having the axis of the planing wheel placed horizontally, will, however, be more simple and less expensive than that intended to operate on two planks simultaneously.

In the accompanying drawing, Fig. 1 is a perspective representation of the principal operating parts of the machine when arranged and combined for planing, tongueing, and grooving; and when so arranged as to be capable of planing two planks at the same time, the axis of the planing wheel being placed vertically, A A, is a stout substantial frame of the machine, which may be of wood or iron, and may be varied in length, size, and strength, according to the work to be done. B B are the heads of the planing cylinder, and C C the knives or cutters, which extend from one to the other of said heads, to the peripheries of which they may be attached by means of screws. The knives, C C, with the faces forming a planing angle, may be placed in a line with the axis J of the cylinder, or they may stand obliquely thereto, as may be preferred; but, in the latter case, the edge should form the segment or portion of a helix; *b*. represents a pulley near to the upper end of the axis J; and I a pulley or drum, which may be made to revolve by horse, steam, or other motive power, and from which a belt may extend around the pulley *b*, to drive the planing cylinder and other parts of the machinery; G is the the carriage which is represented as being driven forward by means of a rack and pinion H; against this carriage the plank K, which is to be planed, tongued, and grooved, is placed, and is made to advance with it. It will be manifest, however, that the plank may be moved forward by other means; as, for example, by an endless chain or band, passing around drums or chain wheels, or by means of geared friction wheels borne up against it. To cause the carriage and plank to move forward readily, there may be friction rollers *f*. *f*. *f*., placed horizontally and extending under them; the rollers *f*. *f*. *f*. which stand vertically, are to be made to press against the plank, and keep it close to the carriage, and thus prevent the action of the cutters from drawing the plank up from its bed in cutting from the planed surface upwards; they may be borne against it by means of weights or springs, in a manner well known to machinists. In a single horizontal machine, the horizontal friction rollers may be geared and the pressure rollers placed above them to feed the board with or without the carriages, a bed plate being used directly under the planing cylinder.

Fig. 2 is a separate view of the planing cylinder, with its knives or cutters, and Fig. 3 an end view of one of the heads. E E are the revolving cutters, or tongueing and grooving wheels, and D D whirls upon their shafts, which may be driven by bands or otherwise, so as to cause said wheels to revolve in the proper direction. (Ex. A, 4.)

Fig. 4 is a side view of one of these wheels; fig. 5 is an edge view of the tongueing wheel, and fig. 6 an edge view of the grooving wheel, the latter being each shown with two cutters in place. The number of cutters on these wheels may be varied, but they are represented as furnished with four. The cutters may be fixed on the sides of circular plates, with their edges projecting beyond the periphery of said plate.

The edges of the plank, as its planed part passes the planing cylinder, are brought in contact with the above described tongueing and grooving wheels, which are so placed upon their shafts as that the tongue and groove shall be left at the proper distance from the face of the plank, the latter being sustained against the planing cylinder by means of the carriage, or bed plate, or otherwise, so that it cannot deviate, but must be reduced to a proper thickness and correctly tongued and grooved.

In fig. 1 above referred to, only one carriage and one pair of cutter wheels are shown, it not being deemed necessary to represent those on the opposite side, they being similar in all respects.

Fig. 7 represents the same machine, with the axis of the planing cylinder placed horizontally, and intended to operate on one plank only at the same time. A A is the frame; B B the heads of the planing cylinder; C C the knives or cutters attached to said heads. To meet the different thicknesses of the planks or boards, the bearings of the shaft or cylinder may be made moveable by screws or other means, to adjust it to the work; or the carriage or bed plate may be made so as to raise the board or plank up to the planing cyliner. E and E′ are the revolving cutters, or tongueing and grooving wheels, which are placed upon vertical shafts, having upon them pulleys D D, around which pass belts or bands, from the main drum I, to which a revolving motion may be given by any adequate motive power.

From the drum I, a belt L, passes also around the pulley *b*, on the shaft of the planing cylinder, and gives to it the requisite motion. There may in this machine be a horizontal carriage moved forward by a rack and pinion, in a manner analogous to that represented in fig. 1; but in the present instance, the plank is supposed to be advanced by means of one or two pairs of friction or feed rollers, shown at f f′; the uppermost f′ f′ of the pairs of rollers may be held down by springs, or weighted levers, which it has not been thought necessary to show in this drawing, as such are in common use. The lowermost of these rollers may be fluted or made rough on their surfaces, so as to cause friction on the under side of the plank. M M′ are pulleys on the axles of these lower rollers, which are embraced by bands N N′, which also pass around a pulley O, on a shaft which crosses the frame A A, and has a pulley T, on it, which is embraced by the belt P, on a pulley Q, on the shaft of the main drum I; these bands and pulleys serve to give motion to the feed rollers, as will be readily understood by inspecting the drawing. R R are guide strips used in place of the rollers used for the same purpose, and also for bearing or friction rollers when the machine is vertical, to direct one edge of the plank, and against its opposite edge; any pressure may be used equal to the weight of the board or plank, when worked in a vertical position. One of the cutter wheels should be made adjustable, to adapt it to stuff of different widths.

Amended specification.

The planing cylinder, and likewise the cutter or tongueing and grooving wheels, may be constructed in the manner represented in figures 2, 3, 4, 5, and 6, and herein before fully described. One of the heads of the planing wheel may be made moveable to accommodate its width to the width of the boards or plank to be planed.

The respective parts of this machine may be varied in size, as may also the velocity of the motion of the planing cylinders and cutter wheels; but the following has been found to answer well in practice. The planing cylinder, having four knives or cutters, may be twelve inches in diameter, and may make two thousand and upwards revolutions in a minute. In a machine like that shown in fig. 7, the main drum I, may be two feet in diameter, and may be driven with the speed of five hundred and upwards revolutions in a minute. The pulleys on the planing cylinder, and on the cutter wheels, may be six inches in diameter. The plank should be moved forward at the rate of about one foot for every hundred revolutions of the cutter wheel; and, of course, the diameter of the feed rollers and of the pulleys by which they are turned, must be so graduated as to produce this result. The size and speed of the above parts of this machine may be in some degree varied, but the above have been found to work well.

Having thus fully described the parts and combination of parts, and operation of the machine for planing, tongueing, and grooving boards or plank, and shown various modes in which the same may be constructed and made to operate without changing the principle or mode of operation of the machine, what is claimed therein as the invention of William Woodworth, deceased, is the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device, to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed, to the unplained surface, as described.

And also the combination of the rotating planes with the cutter wheels for tongueing and grooving, for the purpose of planing, tongueing, and grooving boards, &c., at one operation, as described. And also the combination of the tongueing and grooving cutter wheels for tongueing and grooving boards, and at one operation, as described.

And, finally, the combination of either the tongueing or the grooving cutter wheel for tongueing or grooving boards, &c., with the pressure rollers, as described, the effect of the pressure rollers in these operations being such as to keep the boards, &c., steady, and prevent the cutters from drawing the boards towards the centre of the cutter wheels, whilst it is moved through by machinery. In the planing operation, the tendency of the plane is to lift the boards directly up against the rollers; but in the tongueing and grooving, the tendency is to overcome the friction occasioned by the pressure of the rollers.

WILLIAM W. WOODWORTH,
Administrator of William Woodworth, deceased.

Witnesses:
James Milholland,
Chs. M. Keller.

This together with the foregoing four other pieces of paper annexed, numbered A, 1, 2, 3, 4, is the exhibit A referred to by Wm. W. W. Wood in his examination.

WM. W. W. WOOD.
THOS. ALLEN CLARKE,
Commissioner.

The United States of America, to all to whom these letters patent shall come.

Whereas Daniel Barnum and Thomas J. Wells, of New York, N. Y., have alleged that they have invented a new and useful improvement in planing machines, (the said Wells having assigned all his right, title, and interest in said improvement to the said Barnum,) which they state has not been known or used before their application, have made oath that they are citizens of the United States, that they do verily believe that they are the original and first inventors or discoverers of the said improvement, and that the same hath not to the best of their knowledge and belief been previously known or used, have paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Daniel Barnum, his heirs, administrators, or assigns, for the term of fourteen years from the fourteenth day of March, one thousand eight hundred and forty-nine, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said D. Barnum & T. J. Wells, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed. Given under my hand at the city of Washington, this thirteenth day of March, in the year of our Lord one thousand eight hundred and forty-nine, and the independence of the United States of America the seventy-third.

THOMAS EWING, *Secretary of the Interior*.

[SEAL.] Countersigned and sealed with the seal of the Patent Office.

EDMUND BURKE, *Commissioner of Patents*.

[For drawing see original, page 137.]

Schedule referred to in these letters patent and making part of the same.

To all whom it may concern, be it known, that we, Daniel Barnum & Thomas J. Wells, both of the city, county, and State of New York, have invented and applied to use new and useful improvements in machinery for planing boards and plank, and we hereby declare the following descriptions, with the accompanying drawings, to be a full and clear description and representation of the same—the same letters refer to the same parts in the different figures. Fig. 1 is a perspective representation of the machine with its combinations; fig. 2 is a ground plan, or top view of a part of the machine, shewing the curved fence and the screw clamps or gauges I, (J cannot be seen in this fig.,) and also the disk E, with the gouge cutters G upon the periphery, the finishers F being true with the face of the disk cannot be seen; fig. 1, A shows the main frame, B the standard for the support of the shaft C, upon which is seen the main driving pulley D, and also the face disk E, fitted with one or more long or broad smoothing knives or finishers F, the edge of which should form a line at right angles to the line of the shaft C; the disk is also fitted with six, more or less, deep cutting gouges, placed upon the periphery for the purpose of cutting off the roughest part. The gouges act first to chip or hew away the wood roughly but to a flat surface, and then the finishers follow and reduce it to a smooth plane. This is accomplished by their being placed near the centre, so that they revolve in a rather smaller radius, and thus act upon the wood after the gouges have finished; the curved fence H, is constructed with a slight curve at the centre of the disk, on two lines, at an angle with the line formed by the face of the disk, as seen in fig. 2, and diverging therefrom each way to the ends of the machine; I and J are gauges or "screw clamps with proper contrivances" adapted to both lines and to the curve of the fence, and whether they are fitted with a tongue and groove, or any other device, to act upon the edges of the board, they must extend beyond the disk on each line of the fence both in front and rear, as far as may be necessary to hold the board on the front line as it enters the machine, and also on the rear line of the fence as it leaves the machine; I and J are so constructed as to have a continued action upon the edges of the board from one end of the gauges to the other, so as to spring and to present each portion of the board to the action of the finishers F, on the disk on a curve, as the board passes through the machine; J is a fixture on the fence as seen in the drawings and model, fitted with a tongue, to operate as a clamp upon the under side of the groove in the board, as it is made to slide behind the tongue and between it and the fence; I is fitted with a flange to overlap and clamp the tongue on the board in the same manner, and is also a fixture held firmly by screws to the cross slides T; these cross slides T being adjustable in order to accommodate, or to keep the gauge or clamp I in contact with the different widths of boards, for this purpose weights may be attached to the cross slides T as seen in the drawings and model, or any other convenient means may be used; this will be well understood; these gauges or clamps have neither weights nor springs to act by pressure upon the board; they are literally "screw clamps with proper contrivances" and they are so contrived as to clamp the board upon the edges and to hold it firmly, producing a new result; the springing a board and presenting each portion of it as it progresses through the machine, to the action of the finishers on a curve for the purpose of being planed, and also preventing the finished portion of the surface from coming in contact with the knives on the back part of the wheel. K and K are connecting bars between the uprights L and L, and the double cams P; M and M are each a pair of eccentric clamps constructed upon the principle described and shown in the specification and drawings of Thomas J. Well's patent, dated April 11th, 1846; they are shown in the drawings with a light spring on the back to keep them in a position to act; their eccentric form cause them to clamp the board on the forward motion, and to relax their hold on the return motion, they are placed upon the top of the uprights L and L, and are made to move alternately, producing a continuous motion; the gauge J extends the length of the line in front, and serves as a perpendicular guide to L and L, and also as a guide and support to the board upon its edge, and to direct it between the clamps M and M, into the machine; the parallel motion of the clamps M and M is produced by means of the rockers N and N, upon which the uprights L and L are seen to rest; the segments of the circles of N and N have their centre at M and M; consequently when M and M are made to vibrate on N and N, a parallel motion is produced without ways or slides, as seen in the drawings and model. The connecting bars K and K have each a friction roller fitted to one end, which rollers are made to revolve within the grooves of the double cams as seen at O, these grooved cams may be called female cams; the rollers O, acting alternately upon the outer and inner side of the grooves, produces an arbitrary reciprocating motion; one of the double cams P, and rollers O, being upon the opposite side of P, cannot be seen in the drawing; they are however the same in all respects as those which are seen. These cams are so proportioned that two-thirds of the revolution is taken up in giving the forward motion, and one-third on the return motion; the position of the double cams are reversed, that is, one is a half revolution in advance of the other, so that the one is giving a forward motion, whilst the other is giving a return motion, which being made quicker than the forward motion, affords time for the receding clamp to return and take hold of the board and commence its forward motion before the preceding clamp lets go its hold or commences its return.

The arrangement and combination of the double cams P, the eccentric clamps and the rockers N and N, produce an uniform and continuous forward parallel motion, without ways or slides, and dispensing with all friction and expense in their construction, and by the combination of means which has not been before known or used; R and S shows the feed pulley and belt which gives motion to the feeding apparatus. The planing wheel or face disk E is constructed upon the principle of the Bramah wheel, which was patented in 1802, and described in Ree's Encyclopædia as a face disk at right angles to the axis of motion, with two sets of knives—the relative position and operation of both sets, as well as the form of tools used, are thus described in Bramah's language, "Instead of common tools, bent knives, spoke shaves, or deep cutting gouges, are used for cutting off the roughest part, and planes of various shapes and constructions, as the work may require, are applied to follow the former in succession under the same operation, and which latter I call finishers." The "work" to be done with our improvements "require" the "planes" or "finishers" to be constructed of sufficient length to extend across the entire board, and they are placed upon the disk at about an angle of 15 degrees from a radial line from the centre of the disk; they are "also placed nearer the centre, so that they revolve in a rather smaller radius" than the gouge cutters G on the periphery, and thus act upon the wood "after the gouges have finished" cutting off the roughest part. The position and angles of the finishers F, relatively with the disk E and the board when sprung around the fence, are such that the smooth finish of each cut is given at or nearly in a vertical line from the centre of the disk, at or nearly at right angles with the grain of the wood, and the whole width of the board. This effect is produced by means of the curved fence against which the board is to be held and sprung to a corresponding curve, and by the progressive motion of the board, and as it moves by the disk, a small portion is left by the gouges G, to be taken off by the finishers E at each stroke, at or nearly at the centre of the curve, while cutting with the grain, leaving no circular marks across the board, as the circular marks of each preceding cut is taken off by the succeeding cut of the finishers in the manner above described, by which means an absolute level surface is produced, finished in a manner far superior to that of any other planing machine known. The curved fence used in these improvements is formed, as seen in Fig. 2, on two lines at an angle with the face of the disk E. This form of fence requires the board to be sprung and presented to the action of the finishers on a curve. The means used to hold the board must be such as not only to hold it when sprung, but they must also be adapted to the end of springing each portion of the board as it approaches the point of operation, commencing at the end as it enters the machine, and changing the curve in the board gradually from one end to the other as it progresses through the machine. Each portion of the board is thus made to assume the same relative position with the finishers, while it is being operated upon by them, so that an uniform and even surface is produced the entire length of the board; and for this purpose the screw clamps or gauges, with proper contrivances to act upon the edges, embracing the entire portion of the board which is sprung, and holding it at the point of operation, are used in contradistinction to the pressure rollers as applied and used by Woodworth, and the difference between them is strikingly manifest, for the gauges are firmly held by screws and act upon the edge arbitrarily by clamping it; the rollers act only by pressure upon the face of the board, by weighted levers or springs. The gauges act upon the edges to spring the board between the disk and fence, while the knives are rotating over and operating to plane the surface; while the rollers can only be placed across the surface of the board, one of each being placed in front and rear of the disk; they (the rollers) therefore act on different lines of the fence, without any means to control, or power over the board, after leaving the front roller to curve it while it is passing the planing wheel around the fence to the roller on the rear line of the fence; the correctness of the differences as above recited will be demonstrated by an examination of the curved fence and gauges in combination with the disk, as shown in Fig. 2. The fact that pressure rollers cannot possibly be used as a substitute for the gauges or clamps in combination with a face wheel or disk, will also be seen from an examination of this Figure, in the results which must be obtained were

2478.

rollers used. To illustrate this, we will suppose the gauges I and J removed, (J being under I in this figure, is not seen,) and rollers substituted in their place; as they act only on the face of the board, the rollers must be placed so as to clear the periphery of the disk; this would place them on each line of the fence about at the point where the cross slides T are seen; now suppose a board or plank of sufficient thickness to fill the space between the fence and disk at the centre or shaft is placed upon the front line of the fence, it is plain that, unless the rollers can be made to change the line of motion of the board or plank, it must or would continue on the front line directly against the cutters on the back part of the disk, and therefore could not reach the roller on the rear line of the fence. This result must inevitably follow the introduction of each and every board or plank put into the machine with rollers as a means of holding the board, and every board or plank thus attempted to be planed would be spoiled. The impossibility, therefore, of producing a successful result with rollers as a means of holding the board in these combinations, demonstrates the entire want of analogy (which is by some said to exist) between the gauges or screw clamps, with proper contrivances which are used in these combinations, and the pressure rollers described and claimed in the Woodworth patent. The face disk with gouges and finishers, and the screw clamps with proper contrivances, were patented by Bramah in 1802. We do not claim the original machine, except in combination with our improvements. Bramah used short finishers, leaving the surface marked in circular scores; we use long finishers, by which means (the board being curved) we finish the surface with the grain, leaving no circular marks. Bramah's finishers being short and placed near the gouges upon the periphery, can only finish the surface while cutting from one edge to the other in circles; our finishers being long, embrace the whole width of the board, coming in contact with the surface on the curve nearly at right angles, each cut finishing a small portion with the grain, and each portion of the surface, when thus finished by each cut, must of necessity be parallel to the face of the disk.

Having fully described the parts and combination of parts of our invention, with the modes in which we contemplate applying the same, what we claim as our invention, and desire to secure by letters patent, is the combination, arrangement, and construction of the double cams P, the eccentric clamps M and M, and the rockers N and N, for the purpose of producing an uniform, continuous, and parallel feed motion, without rollers, rack, and pinions, endless chains, or any common device, by which means we produce a parallel feed motion without the expense and friction of ways or slides, whether applied to planing machines or for any other purpose substantially as described and shown.

Also, the construction of the fence H, or any analogous device against which to spring or curve a board to be planed in combination, with screw clamps or gauges with proper contrivances, I and J, or other means adapted to the curve on the fence H, extending each way from the centre of the curve and disk, embracing each line of the fence as far as may be necessary for the purpose of receiving the board or plank, by clamping or otherwise acting upon the edges while it is on the front line of the fence, holding and directing it around the curve, springing and presenting each portion of the board successively to the action of the finishers on the disk on a curve, and also preventing the finished portion of the surface from coming in contact with the knives on the back part of the disk as it passes out of the machine on the rear line of the fence, substantially as described and shown.

Also the combination of the curved fence H and gauges I and J, or any other device for springing and presenting a board or plank on a curve to the action of planes or finishers on a disk, with the disk E and the long or broad finishers F, to extend across the board the entire width and at right angles with the shaft C, for the purpose of planing boards and plank when presented on a curve, thereby finishing them while cutting with the grain, and leaving no circular marks or scores across the board or plank, in the manner hereinbefore substantially described and shown.

The effects of these improvements are the production of a new parallel feed motion, without the friction and expense of ways and slides; and also a new method or principle of presenting a board or plank to the action of the knives or finishers revolving on a disk on a curve, by which means the finished surface is made while the finishers are cutting with the grain of the wood. Thus converting the disk or Bramah wheel, which has hitherto been comparatively of little worth, into a most useful and valuable machine. The tendency of the planing operation with the disk is to move the board edgewise in the same plane in which the knives revolve, in contradistinction to the Woodworth cylinder, which tends to lift the board directly up from its bed as it cuts up and out from the reduced or planed to the unplaned surface, as declared in said Woodworth patent.

DANIEL BARNUM,
THOMAS J. WELLS.

Witnesses:
HENRY Z. DREW,
CHAS. W. SMITH.

This, together with the foregoing two pieces of paper annexed, marked Exhibit B, 1 and 2, form the document referred to by Wm. W. W. Wood in his examination as document B.

WM. W. W. WOOD.
THOS. ALLEN CLARKE, *Com'r*.

STATE OF LOUISIANA,
Parish of West Feliciana, *ss*.

I, Thomas Allen Clarke, the commissioner named in a commission issuing out of the circuit court of the United States, in and for the third circuit, eastern district of Pennsylvania, in a certain suit of equity therein depending, wherein Jacob P. Wilson is complainant, and Daniel Barnum is respondent, do hereby certify, that, by virtue of said commission, hereto annexed, I did call before me William W. W. Wood, the witness named to me by the respondent, at a house upon the plantation of Colonel William H. Baum, in the State and parish aforesaid, and having first administered to him an oath upon the holy evangelists, that he would tell the truth, the whole truth, and nothing but the truth, in relation to the matters at issue between the parties, in answer to the interrogatories and cross interrogatories which are hereto annexed, I immediately, and in presence of said Wood, witness, proceeded to write down the said answers of said Wood to said interrogatories; which said answers, so made by said witness, are the foregoing, and were so written down by me in the presence of said Wood, under his dictation, at the place aforesaid, on this the twenty-seventh day of September, in the year of our Lord one thousand eight hundred and forty-nine.

Given under my hand and seal, this 27th day of September, A. D. 1849.

THOS. ALLEN CLARKE, [L. S.]
Commissioner.

Deposition of George H. White.

Interrogatories to be administered to George H. White, of Hudson, M. D., a witness produced and sworn on behalf of the plaintiff in the within entitled suit.

Q. What is your name, what is your age, and what is your profession, and where do you reside?

Q. Where did you reside in the years 1825, 1826, 1827, and 1828?

Q. Is your father living, or is he dead? If you shall answer that he is dead, where did he die, and at what time; and what was his profession, if engaged in professional business, at the time of his death?

Q. In what professional business, if any, was your father engaged in during the years 1825, 1826, 1827, and 1828, and where?

Q. Were you acquainted with the late William Woodworth, the inventor of planing machine for planing, tongueing, and grooving boards and plank? If you shall answer yea, how long did you know him, and where did he live?

Q. Did you know of the said William Woodworth meeting with an injury to his hand, or any other injury for which he required medical and surgical advice, or either? If you shall answer yea, will you say at what time the injury took place; what it was, and where?

Q. Can you state who attended the said William Woodworth professionally; and did you, during said professional attendance, call upon said Woodworth? State the facts.

Q. If the said Woodworth was confined to his house by the injury referred to, can you state how long he was confined to his house?

Q. Have you any books or memorandums in your possession by which you can fix the time of said time; and if yea, will you state what books or memorandums, and in whose handwriting the books or memoranda you refer to were kept or made?

Q. If you shall answer that you have any books or memorandums in which the name of the said William Woodworth is mentioned in connexion with the injury heretofore referred to, will you state what is said, and the date of the entry, and whether the date, as entered, is the correct date?

Q. Can you state when the said Woodworth became convalescent, or when he had sufficiently recovered so as not to require further professional attendance?

Q. Will you state whether you have a personal knowledge of the facts which you have detailed, and also whether you have a knowledge of the facts connected with the books and memorandums referred to; and whether you have referred to said books or memorandum for any purpose other than to refresh your memory; and do the entries in said books and memorandum correspond with your personal knowledge of the injury to said Woodworth hereinbefore referred to? State fully.

UNITED STATES OF AMERICA,
State of New York, Columbia county, ss.

Be it remembered that, on this fifth day of October, in the year [of our Lord] one thousand eight hundred and forty-nine, before me, the subscriber, Rodolphus P. Skinner, recorder of the city of Hudson, and judge of the mayor's court of said city, (which court is a court of record, having a clerk and seal,) personally appeared George H. White, aged about forty years, a witness for the complainants in a certain civil suit now depending in the circuit court of the United States, for the district and circuit of Pennsylvania, wherein Jacob P. Wilson is complainant, and Daniel Barnum is defendant; and the said witness being by me first carefully examined, and cautioned, and sworn to testify the whole truth, deposeth and saith, in answer to the interrogatories which are hereto annexed as part hereof, as follows:

To the first interrogatory he deposeth and saith: My name is George H. White; I am about forty years of age; I am by profession a physician, and reside in the city of Hudson aforesaid.

To the second interrogatory he deposeth and saith: In the city of Hudson aforesaid.

To the third interrogatory he deposeth and saith: My father is dead. He died in the city of Hudson aforesaid, on the tenth day of February, A. D. 1845, and was by profession a physician, and engaged in such profession at the time of his death.

To the fourth interrogatory he deposeth and saith: As physician and surgeon in the city of Hudson aforesaid.

To the fifth interrogatory he deposeth and saith: I was acquainted with the late William Woodworth, named in said interrogatory, and knew him from the year 1826 until the time of his death. He resided in the city of Hudson aforesaid.

To the sixth interrogatory he deposeth and saith: Yes; said Wood-

2480.

worth so injured his hand in the latter part of the year 1826, at the Block factory, near Hudson. He lost part of his hand by said injury.

To the seventh interrogatory he deposeth and saith: My father dressed his wounds and amputated some of the bones of his hand. I frequently visited him in company with my father, during his professional visits.

To the eighth interrogatory he deposeth and saith: Said Woodworth was confined to his house by said injury about two months.

To the ninth interrogatory he deposeth and saith: Yes, a day book, in which the charge for attendance on said Woodworth is made in my father's handwriting.

To the tenth interrogatory he deposeth and saith: I find a charge on said book against said Woodworth for "amputating three carpal bones, dressing wounds, &c." Said charge is dated December 9th, 1826, which I believe to be the correct date.

To the eleventh interrogatory he deposeth and saith: The last entry in the book spoken of, for visit and dressing wound, is dated February 5th, 1827, at which time I believe said Woodworth was sufficiently convalescent not to require further professional attendance.

To the twelfth interrogatory he deposeth and saith: I have a personal knowledge of the facts which I have detailed, and referred to said books for no other purpose than to refresh my memory; and the said entries in the said day book correspond with my knowledge of the injury to said Woodworth.

GEO. H. WHITE.

Taken, subscribed, and sworn to before me, this 5th day of October, A. D. 1849, no other person being present.

R. P. SKINNER,
Recorder, judge, &c.

And I, the said Rodolphus P. Skinner, recorder and judge as aforesaid, do hereby certify, that the reason for taking the foregoing deposition is, that the said George H. White lives at a greater distance from the place of trial of said cause than one hundred miles. I further certify, that no notification was made out and served from me on the said Daniel Barnum or his attorney, to be present at the taking of said deposition, and to put interrogatories, because said adverse party nor his attorney were within one hundred miles of the place of taking said depositions. And I do further certify, that I am not of counsel or attorney to either of the said parties to this cause, or interested in the event of said cause; and further, that the said deposition was reduced to writing by me, and thereafter subscribed by the said deponent in my presence.

In testimony whereof I have hereunto set my hand and the seal of [L. S.] said court, this 5th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

RODOLPHUS P. SKINNER,
Recorder and judge of the mayor's court
of the city of Hudson, Columbia county, N. Y.

Deposition of Thomas Blanchard.

Interrogatories to be administered to a witness or witnesses to be produced and examined before the honorable Charles L. Woodbury, esq., at his office in the city of Boston, in the State of Massachusetts.

Q. What is your name; what is your age; where do you reside; and what is your occupation or profession, and how long have you been so engaged?

Q. Are you a practical machinist? If yea, how long have you been so engaged?

Q. Are you acquainted with a machine known as Woodworth's machine for planing, and also for tongueing and grooving a board, &c.?

Q. If you shall answer the last interrogatory in the affirmative, will you state whether you have read the amended specification for a patent for said machine, issued to William W. Woodworth as the administrator of William Woodworth, deceased, dated July 8, 1845?

Q. From the reading of said specification, do you understand said machine and its mode of operation? If you shall answer yea, will you state the principle and mode of operation of said machine? Please to state fully said principle and said mode of operation.

Q. Will you look at and examine exhibits A and B, now shown to you, and say what the said exhibits are intended to effect?

Q. Will you state whether, in your opinion, the principle and mode of operation of said exhibits A and B correspond in substance with the principle and mode of operation described in said amended specification granted to said William W. Woodworth on the 8th day of July, 1845?

Q. Will you describe A and B, and say wherein they correspond with the Woodworth machine, and whether the devices used in said A and B are mechanical equivalents to those used in the said Woodworth machine?

Q. Has said exhibit A a combination of pressure rollers, or any analogous device to control the board, &c., and prevent it from being drawn into the knife; and does it cut from the finished to the unfinished surface?

Q. Is the exhibit B a necessary appendage to the operation of exhibit A; and if yea, will you state why?

Q. Is the cut of the knife in exhibit A in effect the same as it would be by a knife placed upon a cone, except as to the reversed position of the material to the knife, instead of the knife to the material?

Q. Will you look at exhibit B, and say whether the combination of cutter wheels with pressure rollers as therein shown in substance, is or is not the same as cutter wheels and pressure rollers combined in said amended specification of 8th of July, 1845?

Q. Have you seen a machine which heretofore was used by Betts and Daniel Barnum, or either, in the city of Albany, like exhibit A and B, or either of them? If you shall answer yea, will you describe that machine, what it was intended to effect, and wherein it corresponded with the exhibits A and B?

Q. State the time, and where, you saw the said machine in Albany. Have you seen it since, and can you state where it is now? State all that you know about it.

Q. Did you know the late William Woodworth, the inventor of the foregoing machine, in 1826 or 1827; and if you shall answer that you did, state whether you had any conversation with him upon the subject of the invention of said planing machine, when, where, and state nearly as you can recollect, the said conversation or the substance thereof.

Q. Have you any letters or memorandum in your possession by which you can fix the time of said conversation? If you shall answer in the affirmative, will you state the dates thereof, and why you refer to said letters or memorandum to fix the time that said conversation took place.

SIDNEY V. SMITH,
Attorney pro plaintiff.

Cross interrogatories to be administered to witness or witnesses, to be produced and examined on the part of the plaintiff, before Charles L. Woodbury, esq., at his office in the city of Boston, in the State of Massachusetts.

First. If you shall, in answer to the third direct interrogatory, say you are acquainted with a machine called Woodworth's planing, tonguing, and grooving machine, state when and where in particular you first saw such a machine; and state, also, what means, in particular, you have had of acquiring a knowledge of such machine, and of the construction and parts thereof.

Second. Have you ever seen, or are you acquainted with a wheel for planing, called the Bramah or Face plate wheel; and if yea, have you known the same successfully used for planing boards and plank?

Third. Is not the wheel for planing in the exhibit shown to you on the part of the plaintiff a face plate or Bramah wheel? Have you ever known a wheel so constructed, successfully used for planing boards and plank.

Fourth. What is the mechanical difficulty in the operation of the said face plate wheel, which has hitherto prevented it from being successfully used; and do you know, or have you ever read, of any device or contrivance by which such difficulty can be obviated or removed? And if yea, state what in particular such device or contrivance is, and wherein particular you have read of, or how you acquired a knowledge of the same.

Fifth. [If] in your opinion, the mode of operation of said face plate wheel, in said exhibit, when used for planing, corresponds in substance with the principle and mode of operation of the machine for planing described in said amended specification, state the particulars in which said machines correspond with each other, and state the grounds of your opinion fully; and state whether any, and if any, what particular part or parts, which compose the machine represented by said exhibit, are like any, and what parts combined, and which form the machine known as the Woodworth's planing machine?

Sixth. Are the circular saws, represented in exhibit R, for tongueing and grooving, usually called cutter wheels, and are they constructed like the cutter wheels described in the said specification annexed to the Woodworth patent?

Seventh. If you shall state you had any conversations with William Woodworth, state in what year they and each of them took place, and what was said in each and every of such conversations by the said Woodworth, and how you are enabled to recollect when such conversations and each of them took place; and state, also, where in particular, and in what building or buildings, each of them took place, and who was present thereat, and in what business, and where in particular, were you engaged when such conversations and each of them *accrued*.

Eighth. Are you, or have you been, and when and how, and to what extent, interested in the said Woodworth patent, or in any machine or machines, or in the right to run the same, constructed according to the specification hereunto annexed.

E. W. STOUGHTON,
Of counsel for deft.

UNITED STATES OF AMERICA,

Circuit court of the United States, eastern district of Pennsylvania.

JACOB P. WILSON }
vs. } At law.
DANIEL BARNUM. }

[L. S.] CITY OF BOSTON, *district of Massachusetts.*

Be it remembered that, on this third day of October, in the year eighteen hundred and forty-nine, before me, the subscriber, a commissioner of the United States circuit court, for the district of Massachusetts, duly appointed to take affidavits and bail in civil causes, as by law authorized, certain interrogatories in writing in behalf of the plaintiff in the above cause, and certain cross interrogatories in behalf of the defendant therein, were produced before me, and which said interrogatories and cross interrogatories are herewith returned; and I did cause Thomas Blanchard, a witness for the plaintiff, residing in Boston, to come before me, to testify, and the examination at said Blanchard's request was adjourned until the fourth day of said October, and on said fourth day, the said Blanchard appearing, the said examination was at his like request adjourned to the fifth day of said October; and on said fifth day of October, the said Blanchard appearing, the said examination at his like request was adjourned to the sixth day of said month; and on said sixth day, the said Blanchard appearing, the said examination at his like request was adjourned to the eighth day (Monday) of said October, for all of which the said Blanchard offered a sufficient reason: that he was plaintiff in a suit then on trial before the U. S. court; and on said eighth day of October, the said Thomas Blanchard again appearing, was by me duly sworn to testify, and being properly cautioned, did depose and say, as follows:

To the 1st. Thomas Blanchard, aged sixty years, Boston, Massachusetts. I am a machinist and an inventor, and have been thus engaged for 40 or 45 years.

To the 2d. I have been forty or forty-five years a practical machinist.

To the 3d. I am acquainted with the machine.

To the 4th. I have read it.

To the 5th. I do understand the machine. The principle of the machine, as I view it, consists of, 1st:

Presenting the material to be cut upon a bench or platform in such a position as to present its surface coming to the action of the knives or cutters in such a manner that the cutters will remove all the superfluous wood that presents itself above the bench or platform that comes within the line of cut, and intended to be removed by said cutters, leaving the board or plank in any given thickness required.

2dly. In fixing the position of said board or plank by rollers in such a manner as to flatten or straighten the hollows or windings of the board while it passes under the action of the cutting instrument. The mode of operation is, by advancing the board by rollers, or other known mechanical power, to the action of the cutting instrument. I think this description, taken with that of the principle which I have given, explains my view of the machine.

To the 6th. They are intended to tongue and groove and plane a plank, leaving it of a uniform thickness by planing on one side, gauged from the rough side, which is left without planing, the tongueing and grooving, with the tongue on one side, and the groove on the other, leaving the board parallel in its width, from end to end.

To the 7th. So far as the tongueing and grooving is concerned, I consider them identical in principle, and generally in the mode of operation. As to the planing. The planing machine combines the same principle as Woodworth's in presenting the board in regard to the uniform thickness; likewise in presenting it firmly held to the action of the cutting instrument, but differing in the application of the principle; for this use, instead of the pressure rollers on the upper or side to be planed, of the plank, there are substituted stationary guides with tongues and grooves, fitting into the tongues and grooves of the plank to be planed, to guide and direct the plank to the operation of the cutting instrument, over the bed plate, or what is substituted for it, viz., a roller.

To the 8th. In the model B, for tongueing and grooving, the groove is cut with the same instrument and in the same position with the Woodworth machine. In forming the tongue, instead of all the cutters being placed on one spindle or arbor, they are placed on three arbors, forming the tongue by saws on three arbors, instead of they being all on one, as in the Woodworth machine.

In model A, there is no device shown for forwarding or advancing the plank to be planed; the plank is presented to the action of the cutter in a curved line, instead of a plane as in Woodworth's. The cutter is a disc, operating in a plane cut instead of a curve, as in Woodworth's; thus far the mode is reversed from Woodworth's. The cutter cutting on the highest point of the curve as the plank advances. I cannot see any thing to the contrary, but what they are mechanical equivalents, but not so perfect in their result as the Woodworth machine.

Interrogatory 9th. The stationary guides, to receive the tongue and groove of the board, are substituted for the pressure rollers on the face of the plank, in Woodworth's machine, and are an equivalent for holding the plank down, while the operation of cutting is performed, and serve to prevent the knife from drawing up the board when in action; it commences at the end and cuts towards the unfinished surface.

Interrogatory 10th. It is. The exhibit B is a preparatory machine, by cutting the tongue and groove, which is requisite first, before the plank can enter the tongue and groove pieces of model A.

Interrogatory 11th. It has that effect.

Interrogatory 12th. I see no power attached to the pressure rollers in exhibit B to advance the material. I think that, in substance, as before answered, the combination for tongueing and grooving is the same as in the Woodworth machine.

Interrogatory 13th. I have no knowledge of it.

Interrogatory 14th. I know nothing about it.

Interrogatory 15th. I was acquainted with William Woodworth; first saw him in 1825. In 1826 he was agent of a factory in New York State, 8 miles below Hudson, where I was putting in operation machinery for turning ships' tackle blocks. During that time, in the fall of 1826 or spring of 1827, I heard Woodworth mention that he was a going to get up a machine for planing, tongueing, and grooving planks and boards. From that time, in the fall of 1827 or the spring of 1828, I saw Wm. Woodworth in the city of Hudson; he shew me at that time parts of the machine, which he said he was building for that purpose, at Daniel Dunbar's shop, in the city of Hudson. Some few months after that I saw Wm. Woodworth in the city of New York, at a place called the Dry dock, where he was putting the machine in operation. I saw the machine; it was for planing, tongueing and grooving; it was the same machine in principle as the one now known as the Woodworth planing machine, differing merely in that that one was vertical, and now they are made horizontal.

Interrogatory 16th. This last statement of the date 1827 I fixed some time ago, by reference to a letter which I had in my possession of that date, which fixed the time I was in Hudson on the business which then occupied me, as before related.

To the cross interrogatories.

To the 1st. I first saw the entire machine at the city of New York, at the Dry dock, as related in my direct answers. I have been acquainted with that machine from that day to this; I saw the first machine that was in operation in Philadelphia, and have seen them frequently in operation also in New York, Boston, and more than twenty other places.

To the 2d interrogatory. I am acquainted with the wheel called the Bramah wheel, and have been for years; I have seen it in operation for planing plank and timber in various places; it was successful in this: I have seen it plane boards—and it will do so where the board is not winding or warping—with good success for a slow operation.

To the 3d. This is a face plate, or Bramah wheel; I have seen it successfully used for the kind of work it is fit for.

To the 4th. I know of no difficulty to prevent it from successfully doing what it is fit for; that is, facing plank or timber without reducing the same to an equal thickness; and it will reduce it to an equal thickness if the board is not warped or sprung, viz., by planing one side, then putting that next the bench or carriage, and planing the other side; I have read of no device respecting it. By these models before me, A and B, I have acquired a knowledge of how the Bramah wheel may be adapted to planing boards, even when they are warped and sprung.

To the 5th. The curve of the board in the exhibit A, presenting its highest point to the disc, or cutter, answers as an equivalent to the curve of the cutting cylinder in the Woodworth machine, where the board is presented in a plane. The grooved and tongued curved ways in the exhibit A answer to the pressure rollers in the Woodworth machine as an equivalent, but would not operate so perfect in planing wide and thin boards, to bring them flat to the bed plate, as the pressure rollers in Woodworth's machine—the mode in exhibit A shewing a less powerful agent to hold down the middle of the thin board, than the pressure rollers in the Woodworth machine; but for narrow stuff this difficulty would not be material; there is no feed here in exhibit A. I see no other point of resemblance, except in the cut in that of the Bramah wheel; it is not so lifting as in that of the Woodworth cylinder. They correspond in cutting from the reduced to the rough surface.

To the 6th. They are not usually called cutter wheels, according to my view. The tongue in the Woodworth machine is made by cutters, all in one arbor; whereas, in the exhibit B, the tongue is made by four circular saws, two on vertical axes, and two on horizontal axes. I refer to my former answer for the further particulars. As to the grooving wheel, that is identical with Woodworth's.

To the 7th. I have answered this in my answer to the direct interrogatory, as far as here questioned.

To the 8th. I have never had any interest in or under Mr. Woodworth's patent, or any other planing machine.

THOMAS BLANCHARD.

And the said deposition having been by me reduced to writing in the presence of said witness, was read over to him, and by him signed in my presence on the day and year last aforesaid.

Witness my hand and seal.

CHARLES LEVI WOODBURY,
Commissioner U. S. cir. court.

I certify the actual taking of this deposition on said 8th of October to have occupied six hours. C. L. W., *Com'r*.

I further certify that the models testified to as exhibits have been marked with my initials, and forwarded to said circuit court by Adams' express by me. CHARLES LEVI WOODBURY.

Deposition of W. S. Pendleton.

UNITED STATES OF AMERICA,
Southern district of New York, city and county of New York, ss:

Be it remembered, that on this ninth day of October, in the year of our Lord one thousand eight hundred and forty-nine, I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress, entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed February 20th, 1812; and the act of Congress, entitled "An act in addition to 'An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States,' " passed March 1st, 1817; and the act, entitled "An act to establish the judicial courts of the United States," passed September 24th, 1789—did call and cause to be, and personally appear before me, at my office, No. 61 Wall street, in the city of New York, in the said southern district of New York, in the State of New York, William S. Pendleton, to testify and the truth to say, on the part and behalf of the defendant, in a certain suit or matter of controversy now depending and undetermined in the circuit court of the United States, for the eastern district of Pennsylvania, wherein Daniel Barnum is defendant, and Jacob P. Wilson, plaintiff. And the said William S. Pendleton, being of lawful age, and having been by me first cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, in the matter of controversy aforesaid, I did carefully examine the said witness, and he did thereupon depose, testify, and say as follows, viz:

William S. Pendleton being duly sworn, *were* examined, and testified as follows:

Q. What is your age, residence, and occupation, or profession?

A. I am 56 years [of age;] my residence, New Brighton, Staten Island; occupation, what is termed in the Directory a gentleman.

Q. Do you know in what office the specifications and drawings of patents, granted by the Government of Great Britain, are deposited and kept?

Complainant's counsel objects to the above question, on the ground that the inquiry does not relate to the issue ordered by the court to be tried in the above cause. Reserved.

A. I will have to refresh my memory; it is the Pettybag office in her Majesty's high court of chancery.

Q. Look at the paper now shown you, and marked by the commission exhibit No. 2, and state whether you have seen the same before.

Objected to on the same ground as to the last question. Reserved.

A. I have seen it before.

Q. When and where did you first see the same?

Complainant's counsel makes the same objection as to the preceding question. Reserved.

A. I saw it in the spring of 1847, at the Pettybag office, at Chancery lane, London.

Q. Is exhibit No. 2, now produced and shown to you, a copy of any written paper and drawings; and if yea, when was such copy made, and where was the written paper and drawings from which said copy was made at [the] time of the making thereof?

Objected, to on the same ground as the preceding question, as also upon the ground that the question goes to show that the paper offered is a copy without showing the loss of an original, and is therefore not the best evidence.

A. The paper and drawings, copy of a written paper and drawings, such copy was made in the spring of 1847; the paper and drawings were in the Pettybag office, in the Chancery lane, London, at the time of the making of such copy.

Q. What did such paper writing and drawings purport to be?

Objected on the ground that the inquiry is not within the line of issue; 2d, that such paper writings and drawings, if produced, will explain itself. Reserved.

A. A patent right to Muir foi a planing machine; I mean specification and drawings of a planing machine granted to Muir.

Q. Were such specification and drawings enrolled in the Pettybag office?

Same objection made as the last; and also that, if enrolled, the enrolment should be produced as the best evidence. Reserved.

A. They were.

Q. Did you compare or not the written paper and drawings marked exhibit No. 2, with the specification and drawings enrolled as aforesaid; and if aye, did you by such comparison ascertain whether such exhibit was or was not an exact copy of the specifications and drawings so enrolled?

Same objection made as to the last preceding question.

A. I did compare them critically, point by point, and word by word, with the specification and drawings; I found them (the specification and drawings here produced) an exact copy of the originals so enrolled.

Q. Do you know J. Benthall, whose name purports to be signed at the bottom of the copy specification marked exhibit No. 2; if yea, what was his employment and where was he employed on the 27th of May, 1847?

Question objected to on the ground that the question does not come within the issue in this suit; and secondly, that Mr. Benthall['s] signature cannot be proved in the way proposed in the question. Reserved.

A. I knew the person; he was clerk in the Pettybag office on the 29th May, 1847.

Q. Were you or not permitted to withdraw from said office any original records there enrolled?

Question objected to on the same grounds as to the last question; and secondly, because records can only be obtained in a legal way.

A. I was not; I was permitted to read any, by paying two and sixpence each, but not to withdraw any.

Q. For what purpose is the Pettybag office of the high court of chancery in London employed?

Same objection as made in relation to the issue to the last question; and secondly, that the law organizing the court of chancery is better than the parole evidence of the witness. Reserved.

A. It appeared to me, as far as I could see, to be devoted exclusively to the filing away of specifications and drawings of patents.

Q. Are you or not acquainted with the subject drawings and specifications of patented inventions; if yea, how did you acquire such knowledge?

Objected to on the ground that the question does not come within the line of the issue. Reserved.

A. I am acquainted with drawings and specifications of patented inventions; I was an engraver and lithographer for 13 years, during which I executed many drawings of patented inventions.

W. S. PENDLETON.

Sworn before me, this 9th day of Oct., 1849.

CHAS. W. NEWTON,
U. S. Commissioner.

UNITED STATES OF AMERICA,
Southern district of New York, ss:

I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed Feb. 20th, 1812, and the act of Congress entitled "An act in addition to an act entitled 'an act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States,'" passed March 1st, 1817, and the act entitled "An act to establish the judicial courts of the United States," passed Sept. 24th, 1789, do hereby certify, that the reason for taking the foregoing deposition is, and the fact is, that the witness   . I further certify, that a notification of the time and place of taking the said deposition was made out and served on the   , to be present at the taking of the deposition, and to put interrogatories if he or they might think fit. I further certify, that on the 9th day of Oct., 1849, I was attended by the respective counsel herein mentioned, and by the witness, who was of sound mind and lawful age, and the witness having been by me carefully examined, and cautioned, and sworn to testify the whole truth, the deposition was by me reduced to writing in the presence of the witness, who subscribed the same in my presence; I have retained the said deposition in my possession for the purpose of transmitting the same by mail to the court for which the same was taken. I further certify, that I am not of counsel or attorney for either of the parties in said deposition and caption named, or in any way interested in the event of the said cause named in the caption.

In testimony whereof I have hereunto set my hand and seal, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

CHARLES W. NEWTON, [L. S.]
United States commissioner for the southern district of New York.

UNITED STATES OF AMERICA,
Southern district of New York, ss:

I, Alexander Gardiner, clerk of the circuit court of the United States of America, for the southern district of New York, second circuit, do hereby certify, that I am well acquainted with the handwriting of Charles W. Newton, whose name is subscribed to the annexed certificate, and that the signature to the same is in his proper handwriting. And I do further certify, that he was at the time of signing the same a commissioner of the circuit court of the United States of America, for the southern district of New York.

In testimony whereof I have hereunto subscribed my name, and affixed the seal of the said circuit court, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of these United States the seventy-third. [L. S.]

ALEXANDER GARDINER.

It is hereby consented, that the exhibits B and C, used upon the examination of witnesses before Charles W. Newton, esquire, United States commissioner, residing in the city of New York, may be boxed up and sealed by the said commissioner, and forwarded to the circuit court of the United States above mentioned, by the Philadelphia express, without prejudice to the said exhibits being produced.

GEO. G. SICKLES,
Of counsel for plt'ff.
M. G. HARRINGTON,
Of counsel for def't.

UNITED STATES OF AMERICA,
Southern district of New York,
city and county of New York, ss.

Be it remembered, that on this 25th day of September, and the within the issue in this suit; and secondly, that Mr. Benthall['s] signature cannot be proved in the way proposed in the question. Reserved.

A. I knew the person; he was clerk in the Pettybag office on the 29th May, 1847.

Q. Were you or not permitted to withdraw from said office any original records there enrolled?

Question objected to on the same grounds as to the last question; and secondly, because records can only be obtained in a legal way.

A. I was not; I was permitted to read any, by paying two and sixpence each, but not to withdraw any.

Q. For what purpose is the Pettybag office of the high court of chancery in London employed?

Same objection as made in relation to the issue to the last question; and secondly, that the law organizing the court of chancery is better than the parole evidence of the witness. Reserved.

A. It appeared to me, as far as I could see, to be devoted exclusively to the filing away of specifications and drawings of patents.

Q. Are you or not acquainted with the subject drawings and specifications of patented inventions; if yea, how did you acquire such knowledge?

Objected to on the ground that the question does not come within the line of the issue. Reserved.

A. I am acquainted with drawings and specifications of patented inventions; I was an engraver and lithographer for 13 years, during which I executed many drawings of patented inventions.

W. S. PENDLETON.

Sworn before me, this 9th day of Oct., 1849.

CHAS. W. NEWTON,
U. S. Commissioner.

UNITED STATES OF AMERICA,
Southern district of New York, ss:

I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed Feb. 20th, 1812, and the act of Congress entitled "An act in addition to an act entitled 'an act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States,'" passed March 1st, 1817, and the act entitled "An act to establish the judicial courts of the United States," passed Sept. 24th, 1789, do hereby certify, that the reason for taking the foregoing deposition is, and the fact is, that the witness   . I further certify, that a notification of the time and place of taking the said deposition was made out and served on the   , to be present at the taking of the deposition, and to put interrogatories if he or they might think fit. I further certify, that on the 9th day of Oct., 1849, I was attended by the respective counsel herein mentioned, and by the witness, who was of sound mind and lawful age, and the witness having been by me carefully examined, and cautioned, and sworn to testify the whole truth, the deposition was by me reduced to writing in the presence of the witness, who subscribed the same in my presence; I have retained the said deposition in my possession for the purpose of transmitting the same by mail to the court for which the same was taken. I further certify, that I am not of counsel or attorney for either of the parties in said deposition and caption named, or in any way interested in the event of the said cause named in the caption.

In testimony whereof I have hereunto set my hand and seal, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

CHARLES W. NEWTON, [L. S.]
United States commissioner for the southern district of New York.

UNITED STATES OF AMERICA,
Southern district of New York, ss:

I, Alexander Gardiner, clerk of the circuit court of the United States of America, for the southern district of New York, second circuit, do hereby certify, that I am well acquainted with the handwriting of Charles W. Newton, whose name is subscribed to the annexed certificate, and that the signature to the same is in his proper handwriting. And I do further certify, that he was at the time of signing the same a commissioner of the circuit court of the United States of America, for the southern district of New York.

In testimony whereof I have hereunto subscribed my name, and affixed the seal of the said circuit court, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of these United States the seventy-third. [L. S.]

ALEXANDER GARDINER.

It is hereby consented, that the exhibits B and C, used upon the examination of witnesses before Charles W. Newton, esquire, United States commissioner, residing in the city of New York, may be boxed up and sealed by the said commissioner, and forwarded to the circuit court of the United States above mentioned, by the Philadelphia express, without prejudice to the said exhibits being produced.

GEO. G. SICKLES,
Of counsel for plt'ff.
M. G. HARRINGTON,
Of counsel for def't.

UNITED STATES OF AMERICA,
Southern district of New York,
city and county of New York, ss.

Be it remembered, that on this 25th day of September, and the several days herein mentioned, in the year of our Lord one thousand eight hundred and forty-nine, I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress, entitled "An act for the more convenient taking of affidavits and bail in civil causes, depending in the courts of [the] United States," passed February 20, 1812; and the act of Congress, entitled "An act in addition to 'an act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed March 1st, 1817; and the act entitled "An act to establish the judicial courts of the United States," passed September 24th, 1789, did call and cause to be and personally appear before me at my office, No. 61 Wall street, in the city of New York, in the said southern district of New York, in the State of New York, the several witnesses whose names are herein mentioned, to testify and the truth to say, on the part and behalf of the plaintiff, in a certain suit or matter of controversy, now depending and undetermined in the circuit court of the United States, for the eastern district of Pennsylvania, wherein Jacob P. Wilson is plaintiff, and Daniel Barnum, defendant. And the said witnesses being of lawful age, and having been by me first cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, in the matter of controversy aforesaid, I did carefully examine the said witnesses, and they did thereupon depose, testify, and say, as follows, viz:

Depositions of witnesses taken, de bene esse, before Charles W. Newton, a commissioner of the United States for the southern district of New York, at his office, No. 61 Wall street, in the city of New York.

September 25th, 1849. Reid R. Throckmorton being duly sworn, says:

Q. What is your age, occupation, and place of residence?

A. I am a mechanical engineer and machinist; I am fifty years of age; I reside in the city of New York.

Q. Are you acquainted with a machine, now in operation in the city of New York, known as Woodworth's planing machine. If you are acquainted with said machine, state how long you have been acquainted with that machine?

A. I have been acquainted with the machine since 1828 or '29, to the best of my recollection.

Q. During the period which has elapsed since 1829 and the present time, have you or not had opportunities of seeing said machine; and if so, state what opportunities you have had of seeing said machine as in operation?

A. I have used them and built them, and am still using them at this present time.

Q. In what capacity are you using them?

A. I have charge of the New York planing mills, owned by William Vanhook, in which they are using six of them.

Q. Have you any interest in the said machines you have referred to, or in the Woodworth patent, or in any machines constructed according to the specifications contained in said patent?

A. No; no further than the superintendence of them.

Q. Have you read the claim as set forth in the amended specification of the patent granted to William W. Woodworth?

A. I have.

Q. Do you find therein a rotating plane in combination with pressure rollers, or any analogous device to control the board while passing through the machine; or what is the intention of the rotating plane, if there be one, described therein in combination with rollers, or any other analogous device?

Question objected to by Mr. Harrington, counsel for defendant.

Question withdrawn by plaintiff's counsel.

Q. What combination of machinery do you find therein? Please state your views fully.

Question objected to by counsel for defendant.

Question reserved, on the ground that the claim inquired of is contained in the patent, and that the patent is the best evidence; and also on the ground that the construction of the claim is a question of law and not of fact?

A. I find planing, tongueing, and grooving cutter wheels for facing and edging boards, plank, and other material; also, rollers for holding down the board or plank, or other material, whilst being operated upon, or any analogous device.

Q. Do you find combination therein for tongueing and grooving a board or plank at one operation; and if yea, will you state what it is?

Question objected to by defendant's counsel on the same grounds as the preceding objection. Question reserved.

A. I do, of tongueing and grooving cutter wheels for tongueing and grooving boards at one operation as described; and a combination of tongueing and grooving cutter wheels for tongueing and grooving boards, &c., with the pressure rollers as described. The effect of the pressure rollers being such as to keep the board, &c., steady, and prevent the cutters from drawing the board, &c., towards the centre of the cutter wheel whilst it is moved through by machinery; in the planing operation the tendency of the plane is to life the board directly up against the rollers; but in the tongueing and grooving the tendency is to overcome the friction occasioned by the pressure of the rollers.

Adjourned to September 26th, at 2 o'clock, for the purpose of proceeding to take the testimony of a witness who is about to leave the city, whose examination was adjourned to 3 o'clock p. m., of this day.

Objected to on the part of the defendant.

September 26th. Parties appeared, and the examination of the witness continued.

Q. Will you state what tool or instrument is described by Woodworth in his claim to effect the operation of planing; and also whether the same is used in combination with any, and if any, what device or dvices.

A. I should like to have you to ask your questions one at a time.

Question repeated.

A. I cannot answer the question, unless you ask your questions one at a time.

Question repeated again.

A. He describes a rotating plane.

Q. Does he describe that rotating plane to be used in combination with any, and if any, what device or devices?

A. Yes, in combination with cutter wheels for tongueing and grooving in combination with rollers, or any analogous device, to prevent the board from being drawn up by the plane when cutting upwards, or from the reduced or planed, or unplaned surface, as described.

Q. Will you look at exhibit B, and say what, in your opinion, it is intended to represent?

A. It represents a rotating plane.

Q. Will you look at exhibit C, and say what, in your opinion, it is intended to represent?

A. That appears to represent a machine for tongueing and grooving boards.

Q. Will you describe the operation of said exhibit C, and the combination of machinery therein shown to tongue and groove a board?

A. It appears to be a spindle mounted with circular saws, three spindles, which I should think were intended to perform the operation of making a tongue on a board or plank; and opposite to that, on the same machine, is another spindle of the same character. This spindle appears to be supplied with cutters for *a* reducing a groove—planing the surface each side of the groove. These said cutters each side of the centre one appear to be intended to represent the Woodworth cutter, although very badly fitted in this model. It appears, also, to be rollers here for feeding through or holding down materials whilst being operated upon.

Q. Will you state the manner in which the planing operation is performed in exhibit B.

A. It appears, from this model, to be performed by a rotating planing wheel, with cutters on the periphery, and also projecting from the face, with a knife. It represents a knife more than a cutter. The knife appears to be made so as to cover the whole surface of the board, from edge to edge—the board being carried through the machine, and held down, or held to the bed plate by means of clamps. One appears to be provided with a groove, and the other with a tongue. The board being tongued and grooved before it is put into this machine, is held down in its place, by being run in between those two clamps—one receiving the tongue of the board or plank, and the other the groove. Those clamps, as exhibited here in the model, appear to be circular; by that means the board or plank is sprung circular, and is kept so whilst passing through the machine; by that means the board, of course, would be operated upon at that part which protrudes farthest from the bed plate. That would have the effect to keep the board away from the knife after it is operated upon, and the knife would recede from the board after it had done its operation; that is to say, in the revolution of the knife, it would be further from the board than when it is performing its cut. By that means, this wheel would produce a cut very similar to a very faint cone on a very large cylinder—the knife only operating upon a small part of the circle, and that part where the board is bent the most. The action of that knife is very little different from a conical knife, notwithstanding it is no more nor less than a simple face plate wheel; but the arrangement and the ingenious contrivance for fetching the plank up to the planing wheel makes that meet that rotary knife, in my opinion, to produce a cut similar to a faint cone, or a large cylinder.

Q. Will you state what is the object and also the operation of the roller at the back of the bed plate?

A. I should think the object of the roller is to relieve the bed plate from the great pressure against it, by bending the board, which is produced by those clamps merely acting as an anti-friction roller, to bear the plank from the bed plate, still pushing the board out a sufficient distance from the bed plate to produce a cut by the long knife directly opposite to the roller, and by that means would prevent the knife from touching the board, after a cut is performed; still the board being fed up, will be acted upon by every revolution of the knife directly opposite the roller, or on that part of the board that is the most thrown out; by that means producing, as it were, a kind of a dubbing cut.

Q. What kind of cut is performed by the Woodworth machine?

A. It is a dubbing cut; only it is a smaller circle.

Q. Will you state whether, in your opinion, the operation of planing, tongueing, and grooving a board or plank, in the said exhibits B and C, as in the Woodworth machine, are substantially the same, or are they different?

Question objected to by defendant's counsel, on the ground that it does not ask whether the machine of Woodworth is like or unlike the models here produced. Question reserved.

A. As far as the planing the facing of the board is concerned, the wheel itself is different, being a face plate wheel; the knife is the same; the motion of the knife is different, that is to say, the direction in which the knife travels is different, and notwithstanding that the cut and the effect produced is about the same nearly, but not quite the same, that being produced by the bending of the board directly opposite and underneath the shaft, so that, when the knife operates, it only operates on a small section of the board, at a time differing in that particular from the operation of the Bramah or face plate wheel, which, while operating the tool, is in constant contact with the material, from the *line* it enters the board till it passes around to the other side—passes off the other side of the board, I mean. You will find, in a previous answer, I said that the cut produced by this wheel was the same as that produced by the frustrum of a cone, or very large cylinder.

REID R. THROCKMORTON.

Sworn before me, this 26th day of Sept., 1849.

CHAS. W. NEWTON,
U. S. Com.

Cross examined on the part of the defendant by Messrs. Stoughton and Harrington.

Q. Look at the planing wheel in exhibit B, and state whether it is substantially like that known as the Bramah wheel.

Objected to by complainant's counsel, on the ground that the issues to be tried are, whether the machine of Barnum and the machine of Woodworth are an infringement upon each other, and that the defendants have no right to inquire about the Bramah wheel. Objection reserved.

A. The wheel itself, I think, is substantially the same; the only difference is the length of the knife in Bramah. He uses a narrow chisel, which operates from one edge of the board to the other, in an eccentric direction.

Q. Did you ever make a number of experiments for the purpose of using a planing wheel substantially like that described by Bramah, and if yea, were such experiments successful or unsuccessful?

A. I did, they were unsuccessful; they were tried a number of years ago, as far back as 1825, or 1826.

Q. Do you know whether there has or has not been immense sums of money expended to bring the Bramah wheel into use, but that it could not be done to a useful purpose?

Complainant's counsel makes the same objection as the preceding question. Question reserved.

A. I do; I think that is so.

Q. Has the difficulty (hitherto been) in the use of that wheel, its "back lashing?"

A. That has been one difficulty.

Q. Be kind enough to explain the meaning of the words "back lashing," as applicable to the operations of the face wheel in exhibit B?

A. Back lashing is a kind of mark or cut produced on the board after it is planed, after it passes the centre of the wheel, produced by the tools in repeating their motions over the finished board.

Q. Had the face plate, or Bramah wheel, such as you now see before you in the model in exhibit B, ever to your knowledge been successfully used to plane boards prior to its being so used by the defendant Barnum?

Objected to by plaintiff's counsel, on the same grounds as above stated.

A. I don't think I ever saw Mr. Barnum's machine operate; I can't say any thing about his, or any other; I never knew any of the Bramah wheels to be successful.

Q. Do you know of any invention or contrivance by which that wheel can be successfully used to plane boards or plank, unless the same can be so used by the invention and contrivance of Wells and Barnum?

Same objection made to question as above.

A. I don't know what their plan is.

Q. Do you know of any invention or contrivance by which the Bramah wheel can be successfully used to plane boards or plank?

A. I don't think I do, according to the way he described it, without combining some other inventions with it.

Q. Were you ever able in the course of your experiments with it to combine with it any contrivance by which boards or plank could be planed successfully?

Same objection made by plaintiff's counsel as above.

A. Yes.

Q. How long have you known of the existence of the wheel called the Bramah wheel?

Same objection as above.

A. I don't know exactly how long; it is a good many years; I could not tell how long I have known that wheel; I could not answer that question; I think something like since 1829 or 1830, something in that neighborhood.

Q. When did you first see a machine called Woodworth's planing machine, and where?

A. In 1828, or '29, in the city of New York.

Q. Do you know whether or not that was the first machine built upon Woodworth's plan?

A. I do not, only from hearsay.

Q. At what particular place in the city of New York was that machine?

Question objected to by plaintiff's counsel on the ground that the defendants have no right to inquire into any other part, except that contained in the amended letters patent. Question reserved.

A. It was at the Dry dock on the East river.

Q. Was William Woodworth himself there engaged about that machine?

Question objected to on the same grounds as above.

A. I don't know; I did not know him; I was invited there to look at it as a curiosity.

Q. How was the planing wheel in that machine constructed?

Question objected to on the same grounds as above.

A. That was a cylinder composed of a number of knives, they being fastened, if my memory serves me right, on *a* circular *plates*, reaching from one to the other of the circular plates, and of sufficient length to reach across the board.

Q. Were the knives upon this wheel parallel with the line of its axis?

A. Yes.

Q. How was the board fed through this machine?

Question objected to on the same ground as above.

A. It was fed through by means of a carriage; it was laid upon a carriage on its edge, and fed through.

Q. Do you recollect in what manner the board thus laid upon its edge was secured to the carriage, with a view of being passed through the machine upon it?

Question objected to on the same grounds as above.

A. I can't recollect distinctly; there were rollers in the machine, but whether they pressed up the board I don't know; I did not notice that part of the machine.

Q. If the board upon its edge, and the line of the axis of the planing wheel was perpendicular—

Question withdrawn.

Q. By what device was the carriage moved in this machine?

Same objection as above.

A. I don't know; there was some rigging under the machine; I don't know what it was.

Q. Do you not recollect that this machine had not feeding rollers?

Same objection.

A. I don't think she had the kind of feeding rollers we have now, but still I don't know; I am indefinite about it; I give no opinion on that.

Q. State to the best of your recollection whether this machine had or had not feeding rollers?

Same objection as above, by plaintiff's counsel; objection reserved.

A. I have answered that question.

Q. In this machine you saw at the Dry dock, were there any cutters to reduce the boards planed, tongued, and grooved therein, to a width?

Same objection as above by plaintiff's counsel; objection reserved.

A. There was upon one side of the machine, but not upon the other. There were rotating tools upon one edge of the plank, and tool for working the groove on the other. I think the groove edge of the plank was not dressed in that machine. I think the boards were sawed to a width before they were put into the machine.

Q. Would not the extreme width of the board, including the tongue cut therein, be the same after as before it passed through the machine?

Objected to on the same grounds as above.

A. Yes, it would, I think.

Q. Then, when you say in answer to my previous question, that there was a tool on one side to reduce to a width, you mean the tool that cut the tongue, do you not?

Same objection as above.

A. I mean the tool that cut the rabit that formed the tongue.

Q. Where did you first know of a machine, a Woodworth machine, with tools adapted therein to reduce the board to a width.

Same objection as above.

A. In 1829, or 1830. I think it was in the same year I saw the first machine; that I saw the second machine that had in it the tools for edging.

Q. Was there not a serious difficulty in using feeding rollers in one of these machines, without also using therein cutters for reducing a board to a width.

Question objected to on the same ground as above.

A. Yes; and I don't think it could be done.

Adjourned to Sept. 28th, at 3 o'clock, p. m.

September 28th, parties appeared and proceeded with the cross examination of Reid R. Throckmorton.

Q. You have stated that you are a mechanical engineer and machinist, how long have you been engaged in that business?

A. Since 1824, more or less.

Q. You have stated that you have built and used the Woodworth machines; state as near as you can recollect, how many you have built, and how long you have used them.

A. I don't know how many I have built. I have used them since 1834, more or less, to the present time.

Q. Are you acquainted with the specifications and drawings of the Woodworth patent of 1828?

Question objected to by complainant's counsel, that the inquiry does not come within the inquiry of the issues in this suit. Reserved.

A. I have read them, often looked at them, and consider myself as some[what] acquainted with them.

Q. Can you, from your knowledge of said specification and drawings, build a Woodworth planing machine?

Objected to by plaintiff's counsel, because the antecedent question relates to the patent of 1828, and the issues ordered to be tried related to the amended specifications of 1845. Reserved.

A. I think I could build a planing machine from the specifications and drawings of William Woodworth's patent, but perhaps not quite so nice and perfect as the machines of the present day.

Q. Please to state what kind of wheels are described in said specification and drawings for tongueing and grooving?

Same objection made by plaintiff's counsel as to the last question.

A. As near as I can recollect, they were cutters mounted upon a circular plate, the ones for forming the groove of sufficient width to cut the groove, and projecting sufficient distance beyond the periphery of the circular plate to give the groove its sufficient depth. Those for forming the tongue were cutters fastened upon each side of the circular plate, and projecting beyond the said periphery of the said plate sufficient to cut the two rebates, one each side of the board, having in the centre and between the said cutters sufficient quantity of wood to form a tongue, the thickness of said tongue being designated by the thickness of the circular plate.

Q. Look at the specifications and drawings now shown to you and marked exhibit No. 1, on the part of the defendant, and state whether you are acquainted with said specification and drawings.

Question objected to by complainant's counsel, on the grounds: 1st. That the question does not come within the issue; and, secondly, there is no proof to show that the exhibit is an original specification and drawings. Question reserved.

A. I believe I am some [what]acquainted with it.

Q. What in general is there described and represented?

Question objected to by complainant's counsel, on the ground that the question does not come within the issue.

A. This specification and drawing appears to represent machinery for working flooring boards.

Q. Whose machine do they represent?

Same objection as above to the last question. Reserved.

A. This drawing and specification appears to represent the drawing and specification of Muir, of Glasgow.

Q. What kind of tools are therein described for tongueing and grooving flooring boards?

Same objection as to the last. Reserved.

A. It appears to be a *compages* of saws.

Q. Are the contrivances therein described and represented for tongueing and grooving similar to those represented in the model, exhibit C?

Same objection made as to the last question. Reserved.

A. The saws and contrivances upon one side of this model do represent, I should think, tolerably well, the Muir method of making the tongue. I don't think the groove side of this model represents the Muir machine for grooving as in the drawing and in the specification, represents a widthing saw and a saw for taking out the entire groove, which is not the case in this exhibit C; the plank, board, or material, I should think, was brought to a width by a rotary cutting wheel; and in the case of the Muir machine, instead of the edge of the plank being planed on the groove, as in exhibit C, it is merely left rough from the saw, which saws the board to a width running across the edge of the board; consequently, in the Muir machine there is no finish to that edge of the board, or in either of the rebates that form the tongue, any more than a circular saw would leave in any case.

Q. Is there not upon the side of the machine where the tongue is formed, in exhibit No. 1, a finishing tool similar to those on the grooving side of the machine in exhibit C?

Same objection made to above question as to last question. Reserved.

A. There is a wheel here—a cutter wheel—which I think is intended, according to the specification, to take off the inequality of the edge of the tongue, which is left imperfect, in consequence of there being no saw to bring that edge of the board to a parallel width.

Q. By what means is the board, in exhibit No. 1, reduced to a uniform width?

Question objected to by compl'ts counsel as to previous question.

A. By circular saws.

Question. Is there in Woodworth's specification of 1828, any means described for using the Bramah wheel?

Question objected to on the grounds—1st. That the question does not come within the issue. Reserved.

A. I should not think there was, without it should come within his meaning and intention of a rotating plane, that being mentioned in Woodworth's specification.

Q. When did you first work upon or build a Woodworth machine?

A. In 1833 or '34.

Q. Can a Bramah wheel be used to plane the entire surface of the board while means are employed upon such surface to hold the board down?

Question objected to on the ground stated to the last question. Reserved.

A. I think it can, if the tools are so shaped and so made as to produce the cut of the cone or a cylinder; if not, it cannot [be made] to answer any useful purpose as a plane.

Q. Is Mr. Vanhook, in whose employ you are, a relative of yours?

A. No, sir.

Q Is he not related to you by marriage?

A. I should think not; I don't know that a man's marrying my sister makes him a relation.

Q. Is Mr. Vanhook interested in the Woodworth patent?

A. I do not think he is any further than the mere use of the patent for a part of the city and county of New York.

REID R. THROCKMORTON.

Sworn before me, this 28th day of September, 1849.

CHAS. W. NEWTON, *U. S. Com'r.*

Examination adjourned to Monday, Oct. 1st, 1849, at 3 o'clock, p. m. October 1, 1849, parties appeared and adjourned by consent to Wednesday, Oct. 3, '49, at 3 o'clock, p. m.

October 3d, 1849. Present, George B. Sickles, esq., complainant's counsel, and M. G. Harrington, esq., def'ts counsel; James E. Serrill being duly sworn on the part of the complainant, was examined and testified as follows:

Q. What is your age, occupation, or profession; residence; and how long you have been so engaged?

A. I am in my 30th year. I reside in the city of New York. I am by occupation a civil engineer, and have been so some 13 years.

Q. Are you acquainted with a machine known as Woodworth's machine for planing, *and also for planing*, and also for tongueing and grooving a board, &c.?

A. I am.

Q. Have you seen the same in operation?

A. I have.

Q. Have you seen the amended specification of a patent for said marked exhibit No. 1, on the part of the defendant, and state whether you are acquainted with said specification and drawings.

Question objected to by complainant's counsel, on the grounds: 1st. That the question does not come within the issue; and, secondly, there is no proof to show that the exhibit is an original specification and drawings. Question reserved.

A. I believe I am some [what]acquainted with it.

Q. What in general is there described and represented?

Question objected to by complainant's counsel, on the ground that the question does not come within the issue.

A. This specification and drawing appears to represent machinery for working flooring boards.

Q. Whose machine do they represent?

Same objection as above to the last question. Reserved.

A. This drawing and specification appears to represent the drawing and specification of Muir, of Glasgow.

Q. What kind of tools are therein described for tongueing and grooving flooring boards?

Same objection as to the last. Reserved.

A. It appears to be a *compages* of saws.

Q. Are the contrivances therein described and represented for tongueing and grooving similar to those represented in the model, exhibit C?

Same objection made as to the last question. Reserved.

A. The saws and contrivances upon one side of this model do represent, I should think, tolerably well, the Muir method of making the tongue. I don't think the groove side of this model represents the Muir machine for grooving as in the drawing and in the specification, represents a widthing saw and a saw for taking out the entire groove, which is not the case in this exhibit C; the plank, board, or material, I should think, was brought to a width by a rotary cutting wheel; and in the case of the Muir machine, instead of the edge of the plank being planed on the groove, as in exhibit C, it is merely left rough from the saw, which saws the board to a width running across the edge of the board; consequently, in the Muir machine there is no finish to that edge of the board, or in either of the rebates that form the tongue, any more than a circular saw would leave in any case.

Q. Is there not upon the side of the machine where the tongue is formed, in exhibit No. 1, a finishing tool similar to those on the grooving side of the machine in exhibit C?

Same objection made to above question as to last question. Reserved.

A. There is a wheel here—a cutter wheel—which I think is intended, according to the specification, to take off the inequality of the edge of the tongue, which is left imperfect, in consequence of there being no saw to bring that edge of the board to a parallel width.

Q. By what means is the board, in exhibit No. 1, reduced to a uniform width?

Question objected to by compl'ts counsel as to previous question.

A. By circular saws.

Question. Is there in Woodworth's specification of 1828, any means described for using the Bramah wheel?

Question objected to on the grounds—1st. That the question does not come within the issue. Reserved.

A. I should not think there was, without it should come within his meaning and intention of a rotating plane, that being mentioned in Woodworth's specification.

Q. When did you first work upon or build a Woodworth machine?

A. In 1833 or '34.

Q. Can a Bramah wheel be used to plane the entire surface of the board while means are employed upon such surface to hold the board down?

Question objected to on the ground stated to the last question. Reserved.

A. I think it can, if the tools are so shaped and so made as to produce the cut of the cone or a cylinder; if not, it cannot [be made] to answer any useful purpose as a plane.

Q. Is Mr. Vanhook, in whose employ you are, a relative of yours?

A. No, sir.

Q Is he not related to you by marriage?

A. I should think not; I don't know that a man's marrying my sister makes him a relation.

Q. Is Mr. Vanhook interested in the Woodworth patent?

A. I do not think he is any further than the mere use of the patent for a part of the city and county of New York.

REID R. THROCKMORTON.

Sworn before me, this 28th day of September, 1849.

CHAS. W. NEWTON, *U. S. Com'r.*

Examination adjourned to Monday, Oct. 1st. 1849, at 3 o'clock, p. m. October 1, 1849, parties appeared and adjourned by consent to Wednesday, Oct. 3, '49, at 3 o'clock, p. m.

October 3d, 1849. Present, George B. Sickles, esq., complainant's counsel, and M. G. Harrington, esq., def'ts counsel; James E. Serrill being duly sworn on the part of the complainant, was examined and testified as follows:

Q. What is your age, occupation, or profession; residence; and how long you have been so engaged?

A. I am in my 30th year. I reside in the city of New York. I am by occupation a civil engineer, and have been so some 13 years.

Q. Are you acquainted with a machine known as Woodworth's machine for planing, *and also for planing*, and also for tongueing and grooving a board, &c.?

A. I am.

Q. Have you seen the same in operation?

A. I have.

Q. Have you seen the amended specification of a patent for said machine, issued to William W. Woodworth as the administrator of William Woodworth, "deceased," the original inventor of said machine?

That part of the question, after the word "deceased," objected to by Mr. Harrington, counsel for deft. Objection reserved.

A. I have seen the amended specification.

Q. Have you read the same?

A. I have, sir.

Q. From the reading of said specification, do you understand said machine and its mode of operation?

A. I do, sir.

Q. Will you state the principle and mode of operation of said machine?

A. The plank, previous to *be* placed in the machine, is reduced to a parallel width; it is then laid on the bed of the machine. The machine being previously in motion, the board or plank is taken hold of by the feeding rollers, which press the plank downwards, and advance it by the same motion to the revolving cylinder, which planes the surface of the board. After it has passed the planing cylinder, a second pair of pressure rollers receive the forward end of the plank. The combined action of these rollers holding the plank firm on the bed plate. The plank, in its progress through the machine, comes in contact with one set of cutters for tongueing one edge of the board, and one set of cutters on the opposite edge of the board to form a groove. The combined effect of this machine being to effect the object of planing [and] tongueing a board at one operation.

Q. Will you look at and examine exhibits B and C, now shewn to you, and state what, in your opinion, the said exhibits are intended to effect?

A. They are intended to plane, tongue, and groove a board at two operations.

Q. Will you state whether, in your opinion, the principle and mode of operation of said exhibits B and C correspond in substance with the principle and mode of operation described in said amended specification granted to said William W. Woodworth; or if they differ, will you state wherein?

A. The combined effects of the two produce the same result. The effect produced by exhibit C is to tongue and groove the board; and of exhibit B to plane the surface, thereby effecting the object of planing, tongueing, and grooving, at two operations. The cutters for forming the groove in exhibit C are substantially the same as described in the patent of William W. Woodworth; the saws for forming the tongue are matters not described in that patent. The rollers for holding the board in place, if geared to move, are pressure rollers, in combination with a stationary bed for holding and advancing the plank while being operated upon by the cutters and saws, and are precisely the same as described in the patent of William W. Woodworth. Exhibit B represents the board set on its edge, and operated on in its progress by clamps, which restrain the board, and carry it out of a straight line, (no means being shewn in this model to advance, or of advancing, the board.) At the part where the deflection of the board from a straight line takes place, a friction roller is placed precisely to the point of contact of the cutters (not yet described) for planing the surface of the board. The cutters in this model are of two kinds, those on the periphery of the wheel being in the form of gouges, and those on the arms in the form of plane irons. The deflection of the board being from the point where the roller is placed, before described, frees the cutters on their return motion from striking the surface of the board previously planed. The line of the board previous to the action of the cutters on it, is placed at right angles to the shaft, or axis on which the cutters turn, the declination of the board from the cutters producing another line not at right angles to the shaft before mentioned, as shown on the diagram which I have here marked.

[For diagram see original, page 191.]

On the diagram the lines are more distorted than shown in the exhibits, for the purpose of more fully showing the curved line of the board. The effect being to produce a cone, whether in a more or less extent, in any line beyond a straight line; for, when the board is bent, a cone is formed by the cutters operating on it to a more or less extent, according to the declination of the board show*ed* by the curved lines—the cutters operating on the board after it has *been* began to be bent, or after it is bent. The amount of the surface of the board cut, operated on at once by the cutters, is some inches in length; which distance not being parallel with the motion of the board, or at right angles to the shaft, in consequence of being bent, form the cone as before described, the combined effects of the two exhibits being substantially the same as that described in the amended specification of the patent granted to William W. Woodworth.

JAMES. E. SERRILL.

Sworn before me, this 3d October, 1849.

CHARLES W. NEWTON, *U. S. Com'r.*

Cross examination on the part of defendant by Mr. Harrington, counsel for defendant.

Q. Do you know a planing wheel called the Bramah wheel?

Question objected to on the ground that the Bramah wheel is not within the inquiry ordered by the court. Question reserved.

A. I am acquainted with it.

Here the counsel for the plaintiff states that he will not become responsible, or pay for the cross examination of this witness, or any other witness who shall be cross examined by the defendant or his counsel during the progress of this examination. The commissioner here refuses, as before stated in this examination, to proceed with the cross examination of the witness, except upon the grounds as before stated by the commissioner.

The counsel for the plaintiff now produces the witness to the counsel for the defendant to proceed with his cross examination. The counsel for the defendant now proposes to cross examine the witness, and states that, if bound by law to pay the commissioner for taking such cross examination, the defendant will pay for the same.

The commissioner here states that he will proceed to take the cross examination of the witness, provided the person or persons lawfully bound to pay for said cross examination will give him security for the payment of the same at some future day.

The plaintiff's counsel here states that, if he is bound by law to pay for said cross examination of the witness, he will give the security required by the commissioner.

The counsel for the defendant proposes now to cross examine the witness. The commissioner again says he will take such cross examination provided the security is given as above stated.

The counsel for the defendant refuses to state whether he will give the security required by the commissioner.

Adjourned to October 4th, 1849, at 3 o'clock, p. m.

October 4th, 1849, parties appeared, and adjourned by consent to October 5th, 1849, at 3 o'clock, p. m.

October 5th, 1849, 3 p. m., parties appeared, and plaintiff produced as a witness Peter H. Dreyer, who being duly sworn was examined, and testified as follows:

Q. What is your age, profession, and place of residence?

A. I am 43 years old; a civil engineer. I reside in the city of New York. I have been an engineer since 1829.

Q. Have you had any experience as a practical machinist? If yea, when and where, and how long?

A. Yes, sir. I was engaged in the Baltimore and Susquehanna railroad in that capacity; and on the Patterson railroad and Long Island road. I was engaged in the Baltimore and Susquehanna R. R. in 1831; on the Patterson railroad from 1831 to 1834; and on the Long Island road from 1834 to 1837; and since that time I was engaged in the machinery business in Courtlandt street, in the city of New York, where I had a depot of machinery, where I received orders for machinery which were built under my instruction. I remained there some two years.

Q. Are you acquainted with a machine known as Woodworth's machine for planing, and also for tongueing and grooving a board or plank?

A. I am.

Q. Will you state whether you have read the amended specification of a patent for the said machine, granted to William W. Woodworth as the administrator of William Woodworth, deceased, dated July 8th, 1845?

A. I have.

Q. Will you say whether you have seen the said machine in operation? And if yea, at what place?

A. I have seen the machines in operation at the foot of Bank street, in this city, near the North river.

Q. From the reading of said specification, and from your knowledge of said machine, obtained from witnessing its operation, do you understand the principle and mode of operation thereof? If you do, will you state your opinion thereof fully?

A. I understand the operation of the machine. The plank used to be planed is prepared the regular width, and is laid on the machine, and pressed forward, where it is received by two pressure rollers; thence the plank comes in contact with the rotating plane; after that it is received by two pressure rollers; thence the tongueing and grooving is done by the machine, and passing through the last operation the plank is finished.

Q. Will you look at exhibits B and C, and say what the same are intended to effect?

A. It appears that C is intended for tongueing and grooving plank, and exhibit B for planing plank; floor plank, I presume.

Q. Please to state whether, in your opinion, the principle and mode of operation of said exhibits, B and C, correspond in substance with the principle and mode of operation described in said amended specification of the 8th of July, 1845?

A. I think they are somewhat similar to the *modus operandi* mentioned in said specification.

Q. Will you describe B and C, and say wherein they correspond with the Woodworth machine; and whether the devices used in said B and C are or not mechanical equivalents to those used in said Woodworth's machine.

Question objected to as leading by the defendant's counsel, Mr. Harrington.

A. In the exhibit C I see the tongueing and grooving apparatus are similar to the Woodworth planing machine, of the 8th of July, 1845. I also find pressure rollers similar to his, as described in said patent. Exhibit B presents the planing apparatus with rotary planes on a vertical wheel. The guide plates seem to be analogous to pressure rollers. The guide plates appear to be intended to form a slight curve. In the rear of said guide plates there appears to be a pressure roller which presses against the plank to be planed, and which assists the curvature in the plank. The planes being vertical and the plank curved, makes the plank form a cone to the cutting edges of the planes. The planes operating on the plank will therefore have a dip and lifting cut. As far as the guide plates are concerned, they appear to be equivalent to the use of pressure rollers and the cutter wheel. The planing wheel appears to be equivalent to the rotating planes of the said Woodworth's patent. The planes in exhibit B operating on the wood to be planed similar to the Woodworth patent, as far as the cut on the timber is concerned. Exhibit C appears to be equivalent in regard to the tongue and grooving, and in connection with the pressure rollers. It appears that the staff used for to be planed requires to be of equal width before the tongueing and grooving can be done; whenever that is done, it is then entered into the guide plates of exhibit B, wherein the planing is performed.

Q. Is the cut of the knives in exhibit B in effect the same as the cut would be by a knife placed upon a curve, except as to the reversed position of the material to the knife, instead of the knife to the material, or what is the cut?

Question objected to as leading by defendant's counsel, M. G. Harrington, esquire. Reserved.

A. The cut is a dip and lift cut; the material forming an oblong cone to the cut of the knife, and therefore if the knives were set conical, and the timber set level, said knives would operate in the same manner in forming the dip and lift cut.

PETER H. DREYER.

Sworn before me, this 5th day of October, 1849.

CHAS. W. NEWTON, *U. S. Com'r.*

The defendant's counsel did not ask to have the above witness cross examined.

Adjourned to October 6th, 1849, at 3 o'clock, p. m.

October 6th, 1849. The parties appeared and the examination was adjourned by consent to October 8th, 1849, at 3 o'clock, p. m.

October 8th, 1849. The parties met and proceeded to the examination of witnesses, and called Thomas W. Harvey, who, being duly sworn, was examined, [and] testified as follows:

Q. What is your age and place of residence?

A. I am 54 years of age, and reside at No. 36 Lexington avenue, in this city.

Q. What is your occupation or profession?

A. I am a mechanical engineer.

Q. How long have you been so engaged?

A. More than 15 years.

Q. Have you during that time been practically engaged in mechanics; if yea, where and in what manner?

A. I have, mostly in this city and Schenectady, in the construction of various kinds of machinery.

Q. Have you, at any time during the period you have referred to, acted in the capacity of consulting engineer; if yea, will you state when, as near as you can, and by whom you have been consulted as engineer?

A. I have. I have been consulted as engineer about five or six years ago by Gilbert L. Thompson, engineer in chief to the United States navy, on matters connected with naval construction.

Q. Are you acquainted with a machine known as Woodworth's machine for planing, and also for tongueing and grooving a board or plank?

A. I am

Q. Will you state whether you have read the amended specification of a patent for the said machine, issued to William W. Woodworth as administrator of William Woodworth, deceased, dated July 8th, 1845?

A. I have.

Q. From witnessing the operation of said machine, and the reading of said specification, do you understand the principle and mode of operation of said machine; if you shall answer yea, will you describe the same?

A. Yes; Woodworth's machine is furnished with two pair of feeding rollers, between which is placed a revolving cutter; at each side of the board are other revolving cutters, having their axis at right angles to those first mentioned; and having cutters or cutting edges formed so that at one side of the board or edge of the board a groove is cut, and at the other a tongue. These several feeding rollers and revolving cutters are connected by a system of gearing which give to each an appropriate movement. In operation, the board is made of uniform width by any ordinary means, and then passed through the machine.

Q. Will you examine exhibits B and C, now shown to you, and say what the said exhibits are intended to effect?

A. I should say they are intended to effect the planing and tongueing of boards by a two-fold operation.

Q. Please to state whether, in your opinion, the principle and mode of operation of said exhibits B and C correspond in substance, or otherwise, with the principle and mode of operation described in said amended specification granted to said William W. Woodworth.

A. Taking the two exhibits together, they are analogous, but not identical in their arrangement.

Q. Will you describe B and C, and say wherein they correspond with the Woodworth machine, and whether the devices used in said exhibits B and C are mechanical equivalents to those used in the said Woodworth machine?

Question objected to, as leading by counsel for defendant. Reserved.

A. B is furnished with a rotating cutter wheel, working endwise to its axis, and having a friction roller opposite to the cutting wheel outside of the board to be planed; the board is passed in front of the cutting wheel, and held in position by guide pieces; which guide pieces and their bed is slightly curved, by which the cutting wheel takes effect upon the board opposite the friction roller, or nearly so; exhibit C is furnished with two pair of feeding rollers, and having one side cutter, intended for grooving the edge of the board, whose axis of motion is at right angles to the axis of motion of the feeding rollers; at the other side or edge of the board is another cutter or saw, intended to make a part of the tongueing process, and having its axis of motion the same as the side cutter previously named, aided by two other cutters or saws, whose axis of motion agrees with the feeding rollers, which together form the tongue. As it relates to exhibit C, the devices are mechanical equivalents, because saws may be made more or less thick, and the cutters to form the tongue; by increasing the thickness of the saws either pair would form a tongue; with this difference, meaning the saws, the machine is identical with Woodworth's, if the revolving cutters were withdrawn from the same. In exhibit B, the devices are mechanical equivalents, so far as it relates to the holding of the board in position to the cutting wheel, in preventing any twist of the board, or approach to the knife by the guide pieces, which serve in that relation the same purposes of the feeding rollers in Woodworth's machine, are also mechanical equivalents in curving or bending the board to the action of the cutters or cutting wheel, which describes a plane, by which the cutting process is performed across the grain or fibre of the timber, and therefore cuts smoother than the cut would be if cut in the direction of the grain; in that place it would be liable to split or tear; I consider it a mechanical equivalent, whether the cutters move or describe a curve, or that they move through, describing a plane, and the board is applied on a curve; in either case they cross cut the grain, and make what is called a smooth cut.

Q. Has said exhibit B any combination of pressure rollers, or any analogous device to control the board, and to prevent it from being drawn into the knife, and does it cut from the finished to the unfinished surface?

Defendant's counsel objects to the question as leading. Reserved.

A. Exhibit B has the combination of guide pieces in combination with cutter wheels, which serve to hold the board in position, [so] as to prevent it being drawn towards the cutters analogous to the feeding rollers combined with the cutter wheel in Woodworth's patent, and that exhibit B cuts from the finished to the unfinished surface of the board.

Q. Is the exhibit C a necessary appendage to the operation of exhibit B; if you answer yea, will you state why?

Objected to as leading by defendant's counsel. Reserved.

A. It is a necessary appendage, because the board is held in position to the cutter wheel by the guide pieces entering and embracing the tongue and the groove, leaving the board flush to be operated upon by the cutter wheel. Exhibit C is a preparatory machine to exhibit B, for the best reason in the world, that the guides hold the board by the tongue and the groove.

Q. Can a board be planed by exhibit B, without first being tongued and grooved by exhibit C; if you shall answer in the negative, will you state why?

Objected to as leading by counsel for defendant. Reserved.

A. I should think it about the same question as the other; I should say no, because there would be no means to prevent it working into the knife or cutting wheel, and to form the curve necessary to a smooth cut.

THOS. W. HARVEY.

Sworn before me, this 8th day of Oct., 1849.

CHARLES W. NEWTON, *U. S. Com'r.*

The witness was thereupon cross examined by M. G. Harrington, esq., defendant's counsel.

Q. Could feeding rollers be used in a machine constructed according to exhibit B, and made to curve the board as a substitute for the gauges, so as to operate successfully?

A. Feeding rollers, two pair, one before and one aft of the cutter wheel, would hold the board on the same curve, aided by the support of the friction roller in the centre, or any analogous seat for the board to rest upon.

Question repeated.

Adjourned to October 9th, 1849, 3 o'clock, p. m., when the cross examination of the above witness is to proceed.

October 9th, 1849, parties appeared, and the defendant's counsel proceeded to the examination of the last witness, and repeated the question last asked to the witness.

A. Upon reflection, I wish to modify my answer as given before, that although a machine with a very small cutter wheel would operate very fairly with such feeding rollers, still with a large cutter wheel it would operate more successfully to have a short section or guide piece between the rollers.

Q. In a machine constructed according to exhibit B, having a curved bed plate or fence, and feeding or pressure rollers used as a substitute for the gauges, to hold the board in position, would not the planing wheel destroy the board at each end?

A. Depending upon the size of the cutter wheel by which the feeding rollers could be placed more or less near, the board at each end, or at the commencement and termination of the same, would be planed deeper than other portions of it; there would be a tendency unaided by the operator or planer to jostle, or get out of position edgeways, but the operator might counteract that difficulty at the commencement of the planing of the board, and the succeeding board would I think counteract it at the termination of the planing of it by the butting against it.

Q. What are analogous devices in mechanics?

A. Things having a change of form, not of effect.

Q. Do you mean to be understood that feeding or pressure rollers in a machine like exhibit B, would have the same effect precisely as do the gauges therein?

A. They would have the same effect, as I have stated before, in holding the board to its right position to the cutting wheel, or passing the board free from a twist, or if the board is twisted, straighting the same, and to give a uniform thickness to the board, and from keeping the board from raising into the cutters or approaching the cutters out of the proper line intended to move, with the small difference before stated of cutting the ends of the board slightly deeper.

Q. Would not that small difference mentioned in your last answer, when a wheel is used large enough to plane a board twelve inches wide, be sufficient to render the machine, if pressure rollers were used instead of the gauges, wholly impracticable?

A. I answer, that in a machine constructed precisely like exhibit B, and having a cutting wheel with its arbor or axis overhanging the board by which it would be necessary to make diameter of the cutting wheel, say two feet four inches, to plane a board twelve inches wide, the machine would work very imperfectly; but if you would make an inside journal overhanging the cutting wheel by which a cutting wheel of one foot two inches would be sufficient diameter to plane a board a foot wide, the same would be a practical machine and plane boards fairly.

Q. Suppose the planing wheel were 34 inches in diameter in such a machine, how far apart would the two pairs of feeding or pressure rollers, one on each side of the wheel, require to be placed to clear the gouges upon the periphery of the wheel?

A. Some 38 or 40 inches—depending upon the size of the rollers; but if the curve of the guide bed was made on a smaller radius, small feeding rollers would be placed more near together.

Q. If the feeding rollers were placed 38 inches apart, how would you direct the board over the curved bed plate, without the use of the gauges, so as to cause the ends thereof to enter between the second pair of rollers?

A. I should think the curve of the bed piece, as shown in exhibit B, deflects from a straight line about an inch and a half in three feet; the rollers, at thirty-eight inches apart, would be nearly four inches in diameter; the board, therefore, would strike within the circle of the roller one-half an inch.

Q. In the planing wheel in the Woodworth machine, are the knives parallel to the axis of motion?

A. They are.

Q. In the planing wheel in exhibit B are the edges of the smoothing knives at right angles to the axis of motion?

A. They appear to be, or nearly so.

Q. In the Woodworth machine, are the cutter wheels for tongueing and grooving circular saws?

A. No; they are not what are termed circular saws, but are cutters capable of being sharpened as a cutting tool or cutting edge.

Q. Are circular saws such cutter wheels as are described in Woodworth's amended specification of 1845 for tongueing and grooving?

A. Woodworth describes revolving cutters technically; they would be understood as edge tools; he does not describe, however, how many cutters he would employ; he says one, two, three, four, or more.

Question repeated.

A. The patentee also describes the method of forming the cutters by screwing the same to a plate. It would be a mere change of form to make such cutters of a single plate; but so long as they retain their character of cutters, the effect would be the same.

Question repeated.

A. I now say that saws are cutters, though less efficient than edge tools, so to speak.

Q. Does the Woodworth machine, as described in the amended specification of 1845, tongue and groove by means of circular saws?

A. Woodworth, in his amended specification of July 8th, 1845, does not employ the term circular saws, but he does employ the words—the tongueing wheel is similar in form to the grooving wheel, but it has cutters on each of its sides, or otherwise so formed and arranged as to cut the two rebates which are necessary to the formation of the tongue.

Q. Did ever you know the Bramah or face plate wheel to be used successfully to plane boards or plank?

A. I am not familiar with the Bramah planing machine.

THOS. W. HARVEY.

Sworn before me this 9th day of October, 1849.

C. W. NEWTON, *U. S. Com'r.*

Adjourned by consent to October 11, at 3 o'clock, p. m.

October 11th, 1849, parties appeared, and the complainant's counsel produced James E. Serrill, a witness, whose direct examination was taken October 3d, and gave the defendant's counsel liberty to proceed with his cross examination.

Q. Do you know a planing wheel called the Bramah wheel?

A. I do, sir.

Q. Was that a face plate wheel or disc?

The question objected to by complainant's counsel, on the ground that it does not come within the line of issue ordered to be tried by the court. Reserved.

A. Yes.

Q. Have you ever known such a planing wheel to be successfully used for planing boards or plank?

Same objection. Reserved.

A. I have, and are now in operation. I saw one of them to-day, at the shop of Mr. Myers, in 27th street, in this city. It is a Bramah wheel, modified arrangement of bed plate, and means of feeding the plank under the face plate wheel. The action of this wheel is as near at right angles with the length of the board as the radius of the planing disk will admit, having gouges on the outer edge of the wheel similar to those described by Bramah, and act substantially the same, requiring a shaving to be taken off, (by hand,) afterwards by a hand plane, to make the surface smooth—the gouges leaving scores across the plank in the direction that the cutters travel in planing the plank.

Q. Have you ever seen a Bramah planing wheel in use that would successfully plane boards and give them sufficient smoothness and finish for flooring and sealing?

Same objection as to the last preceding question. Reserved.

A. I have never seen a wheel constructed by Mr. Bramah.

Q. Have you ever seen a face plate wheel, constructed substantially according to the plan of the Bramah wheel, that would perform the work as indicated in the last question?

Same objection. Reserved.

A. I have, and described it in my former answer; and as to the surface of the plank, it would be smooth enough for those not very particular, but not suitable for finished work; but I am not aware that I have seen any other.

Q. Do you know about the Muir planing machine?

Same objection. Reserved.

A. Do you mean Malcolm Muir of Scotland? If you do, I am acquainted with it.

Q. Is the tongueing and grooving in that machine performed by the same kind [of] tools, or in the same manner, as in the machine described in Woodworth's amended specification?

The complainant's counsel objects to so much of the last question as relates to the tongueing and grooving of Malcolm Muir, as not coming within the issue. Reserved.

A. No, they are not the same; Muir describes saws, four in number, for cutting the tongue.

Q. Are pressure rollers in Muir's machine acting upon the surface of the plank?

Same objection as to the last question. Reserved.

A. Pressure rollers are described in the machine of Mr. Muir, but they operate on the unplaned or back side of the board, to force the board against three stationary plane irons in a fixed bed; the objects of the rollers being to hold the planks against the cutters, or to the cutters, while in the Woodworth machine the object of the pressure rollers are to hold the plank on the bed plate, and prevent it from being lifted up by the action of the cutters of the planing cylinder. These pressure rollers made by Muir, as shown on the published drawing, are in the form of cart wheels, being very narrow, and acting only on a small surface of the board; while the rollers described by Woodworth act across the whole surface of the board.

Q. If the pressure rollers of Muir, were used in combination with the planing cylinder, or cutter wheels, for tongueing and grooving, described by Woodworth, would not such machine be substantially, and in principle and mode of operation, like the Woodworth machine?

Question objected to, so far as relates to the Muir machine, as not coming within the line of issue.

A. No, it would not. I will now state why. The pressure rollers of Muir are not geared to advance the plank against the cutters, therefore the plank would not move at all; and, 2nd, the surface which such wheels represent on the surface is so small and local, that if the board was split or shakey, the cutters by their lifting motion cutting upwards, would draw that portion of the board up to the cylinder—the portion of the board not held by the rollers up to the cylinder—and cut it all to pieces; and if the board was not split and of considerable width, the vibration between the pressure wheels or rollers would form an uneven surface of the board crossways.

Q. Do you mean to be understood that the pressure rollers of Muir and the upper pressure roller of Woodworth are different in principle, or only that Woodworth's rollers are better than Muir's?

Same objection as to the last question. Reserved.

A. The difference is precisely the same as between a dead and living thing—one moves, and the other is moved; also *in* different in form—one being active, and the other inactive.

JAMES E. SERRILL.

Sworn before me this 11th day of October, 1849.

CHARLES W. NEWTON,
U. S. Com'r.

UNITED STATES OF AMERICA,
Southern district of New York, ss:

Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed February 20, 1812; and the act of Congress, entitled "An act in addition to an act entitled 'An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States,'" passed March 1st, 1817, and the act entitled "An act to establish the judicial courts of the United States," passed September 24th, 1789, do hereby certify that the reason for taking the foregoing deposition is, and the fact is, that the witness

I further certify, that a notification of the time and place of taking the said deposition, signed by me, was made out and served on the to be present at the taking of the deposition, and to put interrogatories if he or they might think fit. I further certify, that on the several days of September and October, 1849, herein mentioned, I was attended by the counsel for the respective *counsel* herein mentioned, and by the witnesses, who were of sound mind and lawful age; and the witnesses having been by me carefully examined, and cautioned, and sworn, to testify the whole truth, the depositions were by me reduced to writing in the presence of the witnesses, who subscribed the same in my presence. I have retained the said deposition in my possession for the purpose of transmitting the same by mail to the court for which the same were taken.

I further certify, that I am not of counsel or attorney for either of the parties in said depositions and caption named, or in any way interested in the event of the said cause named in the caption. In testimony whereof I have hereunto set my hand and seal, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

CHARLES W. NEWTON, [L. S.]
United States commissioner for the southern district of N. Y.

UNITED STATES OF AMERICA,
Southern district of New York, ss.

I, Alexander Gardiner, clerk of the circuit court of the United States of America, for the southern district of New York, second circuit, do hereby certify, that I am well acquainted with the handwriting of Charles W. Newton, whose name is subscribed to the annexed certificate, and that the signature to the same is in his proper handwriting; and I do further certify, that he was, at the time of signing the same, a commissioner of the circuit court of the United States of America, for the southern district of New York.

In testimony whereof I have hereunto subscribed my name, and affixed the seal of the said circuit court, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of these United States the seventy-third. [L. S.]

ALEXANDER GARDINER.

Depositions taken before Judge Parmelee.

Circuit court of the United States, for the eastern district of Pennsylvania.

JACOB P. WILSON
against,
DANIEL BARNUM.

NORTHERN DISTRICT OF NEW YORK, *ss.*

George B. Stout, of the city of Philadelphia, being duly sworn, says, that he is the agent for the plaintiff in this suit, and is well acquainted with the facts appertaining to the same; that he is advised by the counsel for the plaintiff, and verily believes that the testimony of Charles D. Gould, gentleman; William W. Many, machinist; John Gibson, gentleman; Alexander McHench, machinist; William Gibson, machinist; George Rork, machinist; and Ira Jagger, furnace-man, all of the city of Albany, in the county of Albany, and northern district of the State of New York, is material and necessary for the plaintiff in the prosecution of such cause. That each of the said witnesses live more than one hundred miles from the city of Philadelphia, where the court at which this cause will be tried is appointed by law to be held. And this deponent further says, that the defendant in this cause resides at the city of Philadelphia aforesaid more than one hundred miles from the place where the examination of the said witnesses is expected to be taken; and that the attorney for the said defendant resides at the city of

Philadelphia aforesaid, more than one hundred miles from Albany as aforesaid; and further this deponent saith not.

GEO. B. STOUT.

Subscribed and sworn to before me, this 10th day of October, 1849.

WM. PARMELEE,
Albany county Judge.

State of New York, *Albany, ss.*

Be it remembered that, on this tenth day of October, one thousand eight hundred and forty-nine, before me, William Parmelee, county judge of Albany county, a commissioner duly authorized for that purpose, at my office, in the city of Albany, and State of New York, came George B. Stout, and made oath that he is the agent for Jacob P. Wilson in a suit depending in the circuit court of the United States, for the eastern district of Pennsylvania, in which said Wilson is plaintiff, and Daniel Barnum is the defendant; that the testimony of Charles D. Gould, gentleman; William V. Many, machinist; John Gibson, gentleman; Alexander McHench, machinist; William Gibson, machinist; George Rork, machinist; and Ira Jagger, furnace-man, all of the city of Albany, in the county of Albany, and northern district of the State of New York, is material and necessary for the plaintiff in the prosecution of said suit; that each of the said witnesses lives more than one hundred miles from the city of Philadelphia, where the court at which said cause will be tried is appointed by law to be held; that the defendant in said cause resides at the city of Philadelphia aforesaid, more than one hundred miles from the place where the examination of the said witnesses is expected to be taken; and that the attorney for said defendant resides at said city of Philadelphia, more than one hundred miles from the said city of Albany; which affidavit is hereto annexed. Whereupon I ordered that said witnesses should be examined, de bene esse, before me, at my office in said city of Albany, on the tenth day of October, aforesaid, at ten o'clock, a. m.; and as well the said plaintiff as the said defendant appearing before me at the time and place last aforesaid, I have, therefore, proceeded with said examination. And the said Charles D. Gould being carefully examined, and cautioned, and duly sworn by me to testify the whole truth and nothing but the truth, saith: " I reside in the city of Albany, and State of New York, and am personally acquainted with the complainant and defendant in this suit. I consider myself acquainted and familiar with the patent granted to William Woodworth, December 27th, 1828, and the amended specification to said patent made July 8th, 1845; and also with the machines which have been constructed under said patent and amendment.

Question. What opportunity have you had for becoming acquainted with the patent and amendment aforesaid, and with the machines constructed under them, and the operation of said machines?

Answer. In the year 1839, I came in possession of some of the machines, constructed according to the specification of said patent, and since then my attention has been called to the use of said machines and to said letters patent.

Question. Are you acquainted with Richard D. Betts, of the city of Albany?

Answer. I am.

Question. Were you acquainted with a machine prepared or used in the mill of said Betts, in Albany, by said Betts and Daniel Barnum, the defendant, or either of them, two or three years ago?

Answer. I saw said Betts and Barnum busy in altering and preparing a machine intended for planing or working for flooring plank and boards. This was two or three years ago, at the mill of the said Betts, in the city of Albany.

Question. Have you since then seen that machine; and if so, where, and in whose possession?

Answer. I saw a machine in Philadelphia, in the month of May or June last, then in use by the defendant, Barnum, which in form and general construction, with alterations specified, was the same machine, I am informed, which I saw in Albany, and which I believe was the same.

Question. Look at the models now shewn to you, and marked as exhibits A and B, and say wherein the machine of which you have spoken corresponds in principle and mode of operation with the said models.

Answer. The machine marked A represents, in its mode of operation and working the surface of the board or plank—the machine which I saw in Albany, at the mill of said Betts, as above stated; but there appears to have been removed from it one or more iron rollers, which served to hold back from the action of the wheel the body of the plank; and there has been removed from it some fixtures for working the edges, if I recollect right. In other respects the machine resembles in its working parts the machine I saw in Philadelphia, as above stated, excepting the apparatus for passing the board through, which is wanting in the model. The machine marked B exhibits a machine or contrivance I saw, at the time above specified, in Philadelphia, and which I saw used in connection with the machine marked A, for working the edges of the boards, to enable them to be used in the machine marked A.

Question. Will you state also how the contrivance, which you saw in the machines above mentioned in Albany and Philadelphia, for controlling the board, corresponds with that of the model A; and whether the board in said machines was bent, as in said model A?

Answer. In the machine, when I saw it in Albany and Philadelphia, there was a contrivance for bending the board back from the plane of the cutting wheel, by which the back lash was avoided or obviated, and so arranged as to give in effect a "dipping and lifting cut;" thus enabling a smooth surface to be obtained, which would be impossible were not some arrangement for that purpose adopted. The arrangement by which this was effected may be thus described: The board having been worked on its edges, a tongue and groove produced was offered to the proper part of the machine, where it found adapted for it the reverse of its own edges—that is to say, a tongue adapted to the groove and for the other edge a groove adapted to the tongue, so that simply and ingeniously the end was attained. In the model B, by which the tongue and groove were produced, there were pairs of feeding rollers through which the board was made to pass, in such manner, direction, and position, as to have the tongue and groove produced by rotating cutter wheels and saws, so as to finish the plank ready for use after having passed through the other machine for flooring or ceiling purposes.

Question. Would the model A, in its operation, cut from the finished to the unfinished surface of the board?

Answer. I think it would.

Question. Do you not know whether it so cuts or not?

Answer. I know it would.

Question. Has the model A rotating planes in combination with pressure rollers, or any analogous device to keep the board from being drawn into the knives, while under the operation of planing?

Answer. There is a rotating wheel or plane which would be called a disk wheel; and I also find a pressure roller, which aids the metallic gauges in performing the offices assigned them in steadying and firmly holding the plank in its passage in the operation of cutting, while passing through the machine.

The last above question being repeated, the witness—

Answers. There is a rotating plane and a pressure roller operating conjointly together.

Question. Does the conjunction of the rotating knife and pressure roller control the board, and keep it from being drawn into the knives?

Answer. If by the drawing into the knives is meant such action as produces a deeper cut from the surface, such action is prevented by the metallic gauges, which guide the plank in its passage through the machine. The pressure roller aids in producing this result.

Question. When you speak of the metallic gauges, do you refer to the wooden gauges of the model A?

Answer. The gauges of the large machine are metallic gauges, corresponding to the wooden ones of said model, and are analogous devices to the pressure rollers in the Woodworth machine of the ordinary construction, for preventing the board from being drawn into the knife.

Question. At what place in Philadelphia did you see the machine of which you have spoken?

Answer. At a steam mill, occupied by Mr. Snowden and Mr. Barnum, in Southwark, Philadelphia.

Question. Have you ever had a conversation with the defendant, relative to the machine you saw at Philadelphia; and if so, when and where, and what was said?

Answer. The defendant was present at the time I saw the machine, as above stated, and stated that he was operating them, and was willing to test the question of infringement, if any attempt was made to bring it before a court.

Question. Was there any thing said in regard to the machine at Philadelphia being similar to the one defendant had used at Albany?

Answer. I suggested that it was a revival of the machine which had been enjoined at Albany, which the defendant admitted; and remarked, that they should have a better chance there than they had had in Albany, or words to that effect; it being understood in that conversation that the tongueing and grooving apparatus had been removed from the machine, and that effect was produced by a separate machine adjoining to it.

Question. Are the machines used by the defendant for tongueing, grooving, and planing, in principle and the result produced, like those constructed under the amended letters patent to William W. Woodworth, by you above spoken of?

Answer. By reference to the patent referred to, I find said Woodworth claims "the employment of rotating planes, substantially such as herein described, (viz., in said patent,) in combination with rollers or any analogous device, to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface, as described." And also the combination of the rotating planes with the cutter wheels for tongueing and grooving, for the purpose of planing, tongueing, and grooving boards, &c., at one operation, as described. And also the combination of the tongueing and grooving cutter wheels, for tongueing and grooving boards at one operation, as described; and finally, the combination of either the tongueing or the grooving cutter wheel for tongueing or grooving boards, &c., with the pressure rollers as described; the effect of the pressure rollers in these operations being such as to keep the boards, &c., steady and prevent the cutters from drawing the boards towards the centre of the cutter wheels, whilst it is moved through by machinery.

In the planing operation, the tendency of the plane is to lift the boards directly up against the rollers; but in the tongueing and grooving, the tendency is to overcome the friction occasioned by the pressure of the rollers. "In the machines referred to, used by the defendant, I find in one of them a rotating plane," in combination with a device to prevent the board from being drawn to the knife; and in the other machine used by him, cutter wheels in combination with pressure rollers to work the edges, which in my mind are infringements upon the claims of the Woodworth patent, above set forth.

Question. Have you any interest in the Woodworth patent?

Answer. I have some interest in that patent.

Question. Have you any interest in this suit?

Answer. Not any.

CHARLES D. GOULD.

Upon his cross examination the said witness deposed as follows:

Question. State how long you were in possession of the Woodworth machine, which you say came into your possession in 1839.

Answer. They continued in my possession until 1843 or 1844.

Question. During the time they were so in your possession, did you have a suit at law or equity about the right for the Woodworth machine; and if so, with whom, and where, and what were the issues tried in such suit?

This question is objected to by the plaintiff's counsel, and the answer taken subject to the objection.

Answer. I had suits with John Gibson of Albany, and others, in which the merits of the Woodworth patent of 1828, were brought into question.

Question. Were you plaintiff or defendant in such suit?

This question was objected to, as the last one was, and answer taken subject to the objection.

Answer. I was defendant.

Question. Was there a trial by jury?

Objected to, and answer taken as above.

Answer. There was.

Question. Was the question of the originality of that patent at issue on that trial?

Objected, and taken subject as above.

Answer. My recollection is, that it was so in issue.

Question. Was the verdict for or against the patent?

Objected, and taken subject as above.

Answer. The verdict was in my favor; and if I recollect right, the plaintiff failed to make out such a title as to enable him to recover.

Question. Did you run those machines which you had in 1839, or hold them under the patent of 1828?

Answer. They were operated by me, under the counsel and advice of Samuel Stevens, esq., of Albany.

Question. Did you not, at that time, own a right in a patent granted to William Woodworth, in 1836; and did you not run those machines under that patent?

This and the question next preceding were objected to, and the answers taken subject as above.

Answer. I was, while using those [machines, the owner of certain rights in Albany county, under a patent granted to William Woodworth in 1836.

Question. Did you not defend the suit by offering the said patent of 1836, and your rights under it, in evidence?

(Objected to, and taken as above.)

Answer. Among the points of defence, my rights under that patent were enumerated.

Question. Do you know whether Richard D. Betts was ever concerned with defendant in running a planing machine in Albany, or in any way interested with defendant in running such a machine in Albany?

Answer. From conversation with defendant and Mr. Betts, I inferred that they were mutually interested in the machine. They were then at work upon preparing for operation.

Question. Have you any knowledge, other than what you have stated, that they were so interested?

Answer. I heard Mr. Barnum express himself as well pleased that he had got a machine which he was then operating with day after day, with the said Betts, and at the mill claimed to be owned by said Betts, which would plane plank and do a good business in spite of the efforts of John Gibson to the contrary; and that he had no doubt but that they (meaning himself and said Betts, and the men *these* employed about them, and aiding them.) would be able to make it operate successfully as a machine for business.

Question. Do you intend to say that said Barnum told you that he was operating said machine with said Betts, or that said Betts was there, with others, aiding said Barnum to operate it?

Answer. I do not mean to state that Mr. Barnum said so, but that it was obvious that such was the fact. What their private relations were, I have no knowledge. I speak only of what was done openly to the observation of all.

Question. How do you then know that said Barnum meant himself and Betts, when he said "they would be able to make the machine operate," &c.

Answer. Because the remark was made in relation to a machine which they were jointly at work upon, and directing others in adjusting and preparing, for their present use, while steam was up and, part of the time, belts applied, for use of the said contrivance.

Question. Were not the other parties mentioned in your previous answer as these employed, also jointly operating and aiding to operate said machine?

Answer. I do not recollect of seeing any other persons than said Barnum and Betts who attempted to direct operations while I was there.

Question. Have you any other knowledge than what you saw of Betts being engaged with Barnum about the mill?

Answer. I do not recollect that I have any other knowledge.

Question. Do you, or do you not, know that the mill stated by you to belong to Mr. Betts was not in possession of Betts at the time referred to, nor was claimed by him to be in his possession?

Answer. I have no knowledge about it.

Question. How were the two machines seen by you in Philadelphia, as above stated, (of which exhibits A and B are models,) connected?

Answer. They were connected only by the one being essential to the use of the other, and both contributing necessarily to the same end.

Question. Were they not separate and distinct machines?

Answer. They were distinct as machines.

Question. Could not boards and plank be tongued and grooved without being planed?

Answer. Certainly they could.

Question. Look at exhibit A, and state what kind of a rotating plane is therein represented. Is it, as a mechanical instrument in itself considered, like or unlike the cylinder described in the amended patent of 1845 to William W. Woodworth?

Answer. It is what is known as a disk wheel, turning upon an axis, upon which, when it is intended to operate, it is made to revolve. The planing wheel or cylinder, particularly described in said patent as one form, perhaps the most proper, is a shaft, with heads at a suitable distance apart, between which the knives are placed, forming a cylinder. This cylinder, so described, is unlike in itself the planing wheel in the model A; but the purpose for which the disk wheel is used renders it a mechanical equivalent.

Question. Describe that part of exhibit A against which the board or plank is held, and which answers the place of a bed plate for the board to rest upon while it is being operated upon; and state whether it does not answer the purpose and perform the same office, relatively with the disk or planing wheel, as does the bed plate to the cylinder in the Woodworth machine, as described in the patent.

Answer. The "rest" referred to, against which the board is sustained, is bent at a slight angle at the point where the knife operates in removing or reducing the surface of the board or material, so that the board or plank, in being compelled to follow the line of the plane of the rest, is made to assume, at that point, a curved form; and in its continued progress, recedes from the plane of the revolution of the knife in the face of the disk—the curved form assumed by the plank making the effect of the knife to cut from the planed, outward, to the unplaned surface of the plank or board. At this angle, where the curve is produced, a friction, or it may be termed a pressure, roller is inserted, which greatly facilitates the operation of that part of the machine. This "rest" answers the purpose of a solid and firm resistance to such disturbance as might be caused by the action of the knife, and is to be regarded as offering or presenting the same advantages to a certain extent as the bed plate in the ordinary form of the Woodworth machine. In the use of this kind of disk or wheel, there is a necessity for the curving or bending of the board or plank in the manner adopted, because it is essential that the knife should cut from the planed or fresh surface outward to the unplaned surface of the board or material. It is essential for two reasons: first, that the knife may operate in smoothing the board in such manner as to avoid the injurious effect of the grit usually retained in the rough fibrous surface left by the saw, and also to avoid the back lash, which necessarily occurs where the onward progress of the board is continued in the same plane, and parallel to the direction of the knife.

Question. Describe that part of exhibit A against which the board or plank is held.

Answer. In the progress of the plank through the machine it is made to pass over, and rubbing against a part of the machine, termed a rest, or fence, which serves to steady and render firm the board or plank while having its surface operated upon, to facilitate the passage of the board through the machine; and to relieve the stress where the friction is greatest, a roller is inserted.

Question. Does this roller answer the same purpose, and perform the same office relatively to the "disc," or planing wheel, as the bed plate to the cylinder in the Woodworth machine, as described in the patent?

Answer. This roller, inserted at the bending point, answers the purpose of the bed plate in the ordinary form of Woodworth's machine more perfectly, and less perfectly than the ordinary bed plate; more perfectly, as it relieves in part the friction caused by the heavy pressure of the board upon the bed plate; and less perfectly, by its liability to become worn and uneven in its bearings and surface, and thus render uneven the thickness of the board.

Question. Does it not perform the same office?

Answer. It does, to a certain extent.

Question. Is this roller, in any sense, such a pressure roller as described in the amended patent to Wm. W. Woodworth in 1845, or is it used for the purpose of preventing the board from being drawn up by the planes, while cutting from the reduced to the unreduced surface, as claimed in said patent?

Answer. The roller is not used for the purpose of preventing the board from being drawn upwards towards the cutters, excepting in so far as it prevents vibration.

Question. In what way does that roller tend to prevent vibration more than a simple angle of that fence without a roller, the fence being solid where the roller is placed?

Answer. Where the superficies and pressure is the same, it is immaterial whether the resistance under the plank is revolving or stationary.

Question. Would not the same results, or effects, be produced on the board with a stationary fence and with a roller?

Answer. The effects would not be the same in practice, because the roller would become unevenly coated by gum and dirt, and thus the form of the roller changed, necessarily causing the plank to be worked with a curved, instead of a plane surface; while the bed plate, if it became coated in the same way, would cause the board to be produced evenly through its length.

Question. Is that the only difference?

Answer. It is the only one that occurs to me now, in addition to what I have stated before.

Question. Will not the roller render the machine less efficient?

Answer. I think it would.

Question. Will you describe the means of holding the board in model A.

Answer. The board is held in its vertical position, and firmly against the rest, by means of what are termed metallic gauges, *in* which are adapted to the edges of the board which have been previously tongued and grooved in the manner usually adapted for flooring.

Question. How is the board conducted through the machine?

Answer. I have described it in my former answers.

Question. Will you explain what you mean by the term back lash?

Answer. It is a stroke of the knife in its backward passage across the prepared surface of the board; and this effect is confined in the planing machine to the face plate wheel.

Question. Have you known the face plate wheel, or Bramah wheel, to be experimented upon for a planing machine; and if so, with what results?

This question was objected to on the part of plaintiff, and the answer is taken subject to the objection.

Answer. I have known of a number of different attempts to use this form of wheel for that purpose; but none were successful, unless they had adopted some features claimed by the owners of the Woodworth patent.

Question. State wherein the contrivance for curving and holding the board in exhibit A is analogous to the pressure roller in the Woodworth patent of 1845.

Answer. It is well understood in mechanics, that unlike things become alike when applied with the same results to the same purpose. The guides or gauges in model A, are very similar, or alike, in their effects to the spring used in the Andrews machine, which was injoined by Judge Nelson as an infringement on the pressure rollers of the Woodworth machine in New York city; the spring was used in the Andrews machine for holding the board down.

Question. Is there any pressure roller used, or any device, in exhibit A like the pressure roller claimed in the Woodworth patent for a like object, or with like results, or any thing analogous to it?

Answer. The pressure roller in the Woodworth patent is claimed as a convenient means of holding the material down in connexion with other purposes; the metallic gauges in the machine, of which exhibit A is the model, are intended to answer the same end.

Question. Can the metallic gauges be analogous to the pressure rollers, when it is impossible to perform their office with the rollers?

Answer. Not to the full extent.

Question. Is it possible to use the pressure rollers in a machine like model A as a substitute for the metallic guages?

Answer. Not to the full extent.

Question. Is it possible to use a machine with a curved fence and disc, as shewn in exhibit A, successfully with pressure rollers as a means of holding the board and directing it through the machine?

Answer. That is a question too practical for me to answer.

Question. With a fence formed on two lines with an angle at the centre as shewn in exhibit A, and in the paper now shewn to you, (marked exhibit C,) in engraving figure 2, and with a face wheel as in exhibit A, and said drawing with rollers placed upon each side of the wheel, with no other means of holding the board and directing it through the machine, would it be possible to use the machine successfully?

Answer. I think not.

Question. In the machine of which exhibit A is a model, are the metallic gauges in that combination analogous to the Woodworth pressure rollers in the patent of 1845?

Answer. To a certain extent they are.

Question. State whether the wheel in model A is a true face wheel; and if so, is it possible to make the knives rotating on that face perform a dip and lift cut by their own motion?

Answer. Supposing a wheel to be constructed with the edges of the knives at right angles with the centre of motion, and to be made to operate upon material presented in a curved or bent form, as is admitted to be the case in the machine of which exhibit A is a model, I should regard the cut made by it as of a "dipping and lifting" character, similar to that made by the knives or a cylinder, the diameter of which is equal to the diameter of the circle in which the board or material was bent, as when used in the first instance.

On the question being repeated, the witness says, he can only answer it as he has answered it. I regard the different parts of the machine as they operate in connexion with each other and not abstractly.

Question. Must not the knife upon the wheel, as exhibited in model A, cut from edge to edge in its rotations over the surface, instead of in curves like the cylinder?

Answer. It cuts from edge to edge; but the curve being in the material operated on, the same result is produced as in the use of the cylinder.

Question. Have the knives on the wheel in exhibit A a tendency to draw the board up from its bed or against rollers as declared in said Woodworth patent; or has it a tendency to move it edgeways?

Answer. That would depend on the set of the knife or the angle at which its edge is presented to the board.

Question. If there is any such tendency, does it arise from the motion of the knives upon the wheel, as it does in the Woodworth cylinder?

Answer. I think that it does.

Question. Does the conjunction of the rotating knife, and the pressure roller in exhibit A, control the board and keep it from being drawn into the knife?

Answer. I do not see that it does.

Question. In the conversation stated by you to have occurred in Philadelphia between yourself and defendant, did you understand defendant to admit, that any part of the machine that he was using had ever been enjoined?

Answer. I understood that the machine then used by defendant was similar (with the exceptions named) to the machines which had been enjoined in Albany; but I do not distinctly recollect that defendant made such admission in words.

Question. Will you describe the method in which the tongue was formed in defendant's machine in Philadelphia?

Answer. The rebates were removed by four saws placed in pairs above and below the projection for the tongue, and the saws of each pair cut at right angles to each other; removing the rebate in a square form, some times of considerable length.

Question. Do you consider the means employed for forming the tongue in the machine you are speaking of substantially the same as the cutter wheel described in Woodworth's patent?

Answer. In both machines the rebates and the tongues are formed by revolving cutter wheels. In the case of the Woodworth patent the mode proposed is to remove the rebate in small pieces, wasting the material entirely; and in the other, only a portion is wasted, and a part so removed that it may be used for other purposes. In both instances, the rebates are formed by revolving cutter wheels, though the construction of the cutting edges of the cutter wheels are different, and the change from one mode to the other might be patentable—circular saws being regarded as one form of a rotating cutter wheel.

Question. Was the difference in form patented by William Woodworth?

Answer. No, it was not; but the application of rotary cutting wheels in the connexion described was patented by him.

Question. Are circular saws ordinarily called cutter wheels?

Answer. They are not.

Question. Are they such cutter wheels as are described in Woodworth's patent?

Answer. Woodworth in his patent suggests the use of cutter wheels for that purpose; and, as required by the law, describes one form which, in the connexion therein made, are well adapted for the purpose.

Question. Does he not describe and claim cutter wheels as described in the claim?

Answer. I do not regard the claim as limited to one form of cutter wheels.

On the question being repeated, the witness says: "He described one form of cutter wheels and makes a claim in reference thereto, in which are the words 'as described,' but these words do not appear to me to refer only to the particular description of cutter wheels."

Question. Did William Woodworth use the terms cutter, or reducing wheels, and circular saws as synonymous terms?

Answer. He speaks of circular saws and reducing wheels to be used for the same purpose; when he uses the term circular saw, he means reducing wheel—a circular saw being a rotary cutting wheel; instead of "reducing" wheel above mentioned, I intended to use the words "rotary cutting wheel."

Question. Does he not in terms make a distinction between them, and say that for certain purposes the one is preferable to the other, as more convenient and efficient?

Answer. He speaks of a reducing wheel as different in form from a circular saw, that is, having a broad cutting edge similar to the cylinder.

Question. Are not the means used for tongueing and grooving in defendant's machine performed by that class of rotating cutter wheels that you have denominated circular saws?

Answer. They are.

Question. Does not the fact you state, of the necessity of the board being tongued and grooved before planing in the machine of defendant, of itself prove the fact of variance between the two machines, defendant's and Woodworth's.

Answer. No; I do not think it varies the character of the machines; I think defendant's machine is to be regarded as one form in which the invention of Woodworth may be applied.

Question. Can the gauges used by defendant be successfully used as a means of holding a wide board, to be operated upon by a cylinder, as described in the Woodworth patent?

Answer. It can be, if the thickness of the board is sufficient to give it stiffness, such as is requisite while being operated upon by the cylinder.

Question. What is the average thickness of the tongue of an inch board, and the under side of the groove; there being that portion of the material operated upon by the gauges in holding it?

Answer. From one quarter to three-eighths of an inch for the thickness of the tongue; and the thickness of the grooved edge of the board referred to would be less than that.

Question. Would that thickness of material be sufficient to hold a board of one foot in width; and would not the centre of the board be drawn up by the action of the cutter, so as to reduce the center to a less thickness than the edges?

Answer. I do not think it would necessarily, though it would be like to do so.

Question. In giving your opinion that the planing machine used by defendant is an infringement on the Woodworth patent of 1845, do you not base your judgment upon the assumed fact that the invention of Woodworth embraces all arrangements for holding and planing boards successfully with rotating planes, irrespective of the means employed?

Answer. No, I do not.

Question. Do you base your opinion upon the similarity of mechanical arrangement, irrespective of the fact supposed to be assumed in the previous question?

Answer. I base my opinion of what the Woodworth invention is upon my appreciation of the language of the specification, and particularly of the claims and the recorded judicial opinions which have been given thereon; and on examination of the peculiarities of defendant's machines, I feel convinced that the mechanical contrivances he has adopted are included within the scope of the Woodworth patent.

Question. What is your age, profession, and employment?

Answer. I am thirty-three years of age, and have no profession or employment.

Question. When did you first become interested in the Woodworth patent of 1828?

Answer. In the year 1839.

Question. Do you still own the right of which you have spoken under the patent of 1836?

Answer. I do not.

Question. To whom and when did you dispose of that right?

This question is objected to, and the answer taken subject thereto.

Answer. It was disposed of, or transferred to, John Gibson in 1843 or in 1842, '3, or '4, I can't say which.

Question. Since that time have you not been engaged in selling rights under said patent of 1828, and assisting in preparing for trial and procuring evidence in various suits in law and equity in favor of said Woodworth's patent?

Answer. I have done so during a portion of the time.

Question. Have you not been so engaged within the last year and the year preceding?

Answer. I have.

Question. Would not a verdict in favor of the defendant in this suit affect the interest which you hold, as you have stated in said patent?

Answer. It would.

CHARLES D. GOULD.

And the said William V. Many being carefully examined, and cautioned, and duly sworn by me in said cause to testify the truth and nothing but the truth, saith:

Question. What is your age, residence, and occupation?

Answer. I am forty-five years of age, reside in the city of Albany, and am a machinist by occupation. I have been for twenty-five years in that business, though not engaged in it now.

Question. Are you a practical mechanic?

Answer. I am.

Question. Are you acquainted with the Woodworth patent for planing, tongueing, and grooving boards, and the amended letters patent granted to William W. Woodworth, and the operation of machines constructed under them?

Answer. I am.

Question. Did you see in operation a machine used by Richard D. Betts and defendant, or either of them, at the mill of said Betts in the city of Albany?

Answer. I saw a machine in a mill in Albany, just north of North Ferry street. I understood the machine and mill belonged to Betts & Barnum. It was not in operation when I was there.

Question. Did you examine that machine?

Answer. I did.

Question. Look at the models A and B, and say wherein the machine you saw at the mill as above stated corresponded with them?

Answer. That machine had a disc wheel like this in model A, with knives on it very similar to this. The plank, when they were planed, passed through a contrivance similar to this in the model. In addition to the gauges in the model which hold the plank back, there were in the machine two rollers in front of the plank, to [the] best of my recollection. I think there was a roller each side of the wheel. There was a cam motion for carrying the plank forward against the knife in that machine, and also a cutter wheel for tongueing and grooving the plank. In other respects the machine corresponded to model A.

Question. Had it metallic gauges like those in model A, for holding and bending the board?

Answer. It had.

Question. Has the model A a rotating plane in combination with pressure rollers or any analagous device for controlling and planing the board while it passes through the machine? If so, describe it.

Answer. It has a rotating plane combined with a pressure roller, which roller bears against the back side of the plank, (I mean the side of the plank opposite the knife,) and two gauges, one on each side of the board, which gauges, in combination with the roller, serve to hold the board in a bent position—the rounding side of the board being next to the knife. When the plank was moved forward against the knife, the knife cut in a slight degree outward from the board.

Question. Does the knife cut from the finished to the unfinished part of the board?

Answer. It does.

Question. From your knowledge of machinery and of the Woodworth patent, and of the machines constructed under that patent, would you consider a machine constructed and used after the models A and B, an infringement on the Woodworth patent?

Answer. I should.

Question. Do you consider the means used in those models as mechanical equivalents for the means used in the machines under the Woodworth patent?

Answer. I do.

Question. Have you any interest in the Woodworth patent or in any machines constructed under it?

Answer. I have no interest at all in either the patent or machines.

WILLIAM V. MANY.

On being cross examined, the witness says, as follows:

Question. How are you acquainted with the Woodworth patent?

Answer. I have read the Woodworth patent several times, and have been acquainted *and have been acquainted* with the machines from seeing them operate frequently. I saw the first of these machines that was put in the city of Albany, and have seen them more or less every year since, and some years a great many times in the course of the year.

Question. How long since you have read the specification to that patent?

Answer. I read a part of it this morning.

Question. What part of it did you read?

Answer. I read the claim.

Question. What did you find in the claim in relation to the planing operation?

Answer. The employment of rotating planes, substantially such as therein described, in combination with rollers or any analogous device, to prevent the boards from being drawn up by the plane when cutting upwards, or from the reduced or planed to the unplaned surface, as described.

Question. Look at model A, and say whether the rotating plane there represented is substantially such a rotating plane as is described in said specification of the patent of 1845?

Answer. The rotating plane on model A differs in its mechanical construction or form, and operates on the board or plank from the finished to the unfinished surface, cutting in a slight degree outwards, operating or finishing the board, or performing the same office as the plane in the Woodworth machine.

Question repeated.

Answer. I consider the plane in model A, and that in Woodworth's machine, as substantially the same, differing only in form.

Question. What kind of rotating plane is described in the Woodworth patent, and what is its motion and its principle of action?

Answer. The description is a shaft with two heads, placed at a proper distance apart, with a knife extending from one to the other. It has a rotary motion, and its principle of action is cutting or planing the face of a plank or board, cutting from the finished to the unfinished portion thereof, at the same time cutting a little outwards from the plank.

Question. Do the edges of the knives in their rotations describe the extreme of the circle in which they revolve, generating a cylinder?

Answer. They do.

Question. Does the tendency of the knife to cut outwards result from the motion of the knife moving in circles while rising from the surface of the board in their revolutions?

Answer. It does.

Question. Do you consider this peculiar action of the knife, while rising in its motion or revolutions, or its lifting tendency, as Woodworth's invention, and is it in that view that you give it as your opinion that the cutting in a slight degree outwards, as you have stated in model A, is an infringement of Woodworth's patent?

Question objected to, and answer taken subject thereto.

Answer. I do not understand that Woodworths invented a rotary cutting wheel at all. It is not in the claim or specification.

Question. For what reason, then, do you refer to the rising cut in model A in comparison with the claim of cutting upwards in Woodworth's patent, and express the opinion that it is an infringement?

Answer. It is a very similar cut to the cut of the Woodworth machine. It is important to the successful action of both machines that the knife should cut from the finished to the unfinished part, and at the same time outwards from the face of the board. The reason why I consider it an infringement on the Woodworth machine is, because it is an equivalent for the cutting cylinder of Woodworth's machine, and it is enabled to succeed by bending the board to enable it to clear itself.

Question. Do you consider that important feature which you have named in your last answer, which you say is necessary to the success of both machines, to wit, such cut as shall enable the knives to clear themselves, to be Woodworth's invention, as a principle or the principle of Woodworth's patent?

Answer. I understand Woodworth's patent to be for a combination of certain well known things for the purpose of planing, tongueing, and grooving plank and boards.

Question. Do you consider the bending of the board as one of those well known things, which is described and claimed in the Woodworth patent, in combination with a face plate wheel?

Answer. I do not understand that the patent says anything about bending boards.

Question. Can the planing of a board when bent be an infringement on Woodworth's patent for any other reason than that the cut is outwards, or are there any means used for bending the board, such as is described and claimed in the Woodworth patent?

Answer. The means used for planing the board in model A are equivalents for the means described in Woodworth's patent.

Question. Does the Woodworth patent claim equivalents for bending a board? And please state what you mean by "equivalents," in relation to the Woodworth patent.

Answer. I do not know that the Woodworth patent claims any equivalent for bending a board. What I mean by equivalent in model A is the roller and guides being so combined and arranged as to bring the board against the knife in its bent position, the effect of the operation of the knife on the bent board being the same, and for the same purpose, and accomplishing the same object, as in Woodworth's patent.

Question. Is it possible to bend a board by any means described by Woodworth, to be operated upon in the manner represented in model A, successfully?

Answer. My opinion is that it is.

Question. State by what means described by Woodworth it is possible to do it.

Answer. By pressure rollers.

Question. How would you apply them to a fence, formed in the manner shown in model A?

Answer. The rollers could be so applied on both sides the board, or both edges, I mean, to follow the groove on one side and the tongue on the other.

Question. How would you so apply them; and are they such pressure rollers as described by Woodworth? State in what part of the Woodworth patent you find the means or method described?

Answer. I would apply the rollers at each edge of the plank, one to follow the groove and the other the tongue. They would be the same in principle, as I understand it. Any roller, as I understand it, pressing against the plank or board, for the purpose of confining it in its place while being operated upon by the machine, whatever may be its form, is the same in principle.

Question. How would you apply the rollers at each edge of the plank or board?

Answer. They could be applied in various ways. They could be applied so as to have the axis of the roller parallel with the face of the plank, or at an angle with it.

Question. Would not the use of pressure rollers, as described and applied by Woodworth, in combination with a fence formed on two lines, with the angle against the centre of the wheel, with no other means of holding the board, occasion the destruction of every plank attempted to be planed by such combination?

Answer. If the rollers were applied in the same form and manner as Woodwoith applied them, I think it would.

Question. How long have you been acquainted with the disc wheel or Bramah wheel?

Answer. I think it was about the time that I first saw the Woodworth machine.

Question. Has not the face wheel, to your knowledge, always been considered as a planing wheel substantially different from the cylinder?

Answer. I cannot say that I have ever heard any thing about it, whether they were considered different or not.

Question. Have you not always regarded them as being different heretofore; and have you not so testified in relation to the machine which you say you saw at Betts' mill?

Answer. I do not know that I have ever regarded them as different, and I do not remember whether or not I have ever testified that they were different.

Question. In your testimony in relation to said machine, did you not testify, that you did not see the wheel in operation, or with the knives in their place, and that you could not tell whether it was a true face wheel, or whether the knives were so set as to form a cone; and that if the knives were set so as to make a cone, then it would be an infringement; but if the knives were set true with the wheel on its face, it would be no infringement, in your opinion?

Answer. I do not remember whether or not I so testified.

Question. Do you now say, that a cylinder with knives upon its periphery moving and cutting in positive circles, or in the line of their motion, and a face wheel with the edges of the knives in a line at right angles with the axis of motion, moving and cutting in a plane, are alike or unlike, in principle or action?

Answer. They are both rotary cutters, and when operating on material the same as model A does, the effect is the same.

Question repeated.

Answer. I can answer this question only as I have before answered it.

Question. Are those two wheels as described as mechanical instruments, substantially alike or unlike?

Answer. They are both rotating wheels, differing in form.

Question. Do they, as instruments, differ in nothing except in form?

Answer. I can [state] only as before, that when combined as in model A, their effect would be the same on the material operated upon.

Question. Can the knives upon a face wheel, the edges of which knives are at right angles with the axis of motion, be made by its own motion to perform any other than a plane cut?

Answer. My opinion is that they cannot.

Question. Can a cylinder with knives on its periphery, the edges of which describe the extreme of the circle in which they revolve, be made to cut in any other than a curve or lifting cut, and in the line of motion?

Answer. They will cut in a curved line.

Question. When did you see the machine at Betts' mill?

Answer. I cannot say exactly the year, it was at the time the litigation was pending between John Gibson and Mr. Betts, and another man whose name I think was Barnum, but am not certain.

Question. Have you any knowledge that defendant was then in Albany, or had any thing to do with said litigation?

Answer. I have not.

Question. Have you ever known defendant previous to this day?

Answer. I have not.

Question. Is the roller you have denominated a pressure roller in model A, applied in the same manner and for the same purpose as the pressure roller described and claimed in the Woodworth patent, or is it placed upon the opposite side of the board, and operating as a bed-plate to determine the thickness of the board, instead of operating to prevent the board from being drawn up by the cutters?

Answer. The roller in model A is placed upon the opposite side of the board from the cutter-wheel, and operates as a bed-plate and roller to keep the plank in its proper place while operated upon by the machine; and also operates to determine the thickness of the board. It does not operate to prevent the board drawing towards the knife.

Question. Do you consider models A and B as representing two separate machines, each performing its own distinct operation?

Answer. If placed apart in separate buildings, they would be separate machines; but if operated together they would be considered one.

Question. Are they not as distinct and separate in their operation when placed in the same building as though in separate buildings?

Answer. Certainly, if they have no connexion with each other.

Question. Will you look at exhibit B, and say whether the means there represented for tongueing and grooving are circular saws?

Answer. They represent cutter wheels, usually called saws. Cutter wheels made thin are usually called saws, and when thicker are commonly called cutter-wheels.

Question. How many are there for forming the tongue?

Answer. The model represents four.

Question. Would you not consider those four saws as a different mechanical arrangement for forming the tongue from the one cutter-wheel described in the Woodworth patent for forming the same thing?

2506.

Answer. They are differently arranged from those in the Woodworth machine.

WILLIAM V. MANEY.

On his direct examination being resumed, the witness answers as follows:

Question. After having gone through your cross examination, do you still adhere to the testimony you gave in your direct examination, or do you wish to modify it?

Answer. I wish to state that, in my direct examination, in one place I stated that the planing wheel in model A cut outward from the face of the plank. What I meant to state then was, that that wheel cuts in a direct plane, but when brought in contact with the board in its bent state, the effect is to cut outwards from the finished to the unfinished part of the board.

Question. Do you want to change or modify any other part of said direct examination?

Answer. Not that I now recollect.

WILLIAM V. MANEY.

And I do further certify, that the preceding depositions of the said Charles D. Gould and William V. Maney, were reduced to writing by me, and signed by the said Charles D. Gould and William V. Maney, and that I am not of counsel or attorney for either of the parties to said suit, nor am I interested in the event thereof.

WILLIAM PARMELEE,
Albany county Judge.

ALBANY, *October* 10, 1849.

And I further certify, that on the said 10th day of October aforesaid, at my office in said city of Albany, by consent as well of said plaintiff as said defendant, and in their absence, I proceeded with the examination of the following witnesses named in said affidavit, upon the direct and cross interrogatories hereto annexed.

Circuit court of the United States for the district of Pennsylvania.

JACOB P. WILSON
against
DANIEL BARNUM.

Interrogatories to be administered to a witness or witnesses to be produced and examined before the hon. Parmelee at his chambers in the city of Albany.

1st direct interrogatory. What is your name; what is your age; where do you reside; what is your occupation or profession; and how long have you been so engaged?

2d direct interrogatory. Are you a practical machinist? If you shall answer "yea," how long have you been so engaged?

Answer. I can [state] only as before, that when combined as in model A, their effect would be the same on the material operated upon.

Question. Can the knives upon a face wheel, the edges of which knives are at right angles with the axis of motion, be made by its own motion to perform any other than a plane cut?

Answer. My opinion is that they cannot.

Question. Can a cylinder with knives on its periphery, the edges of which describe the extreme of the circle in which they revolve, be made to cut in any other than a curve or lifting cut, and in the line of motion?

Answer. They will cut in a curved line.

Question. When did you see the machine at Betts' mill?

Answer. I cannot say exactly the year, it was at the time the litigation was pending between John Gibson and Mr. Betts, and another man whose name I think was Barnum, but am not certain.

Question. Have you any knowledge that defendant was then in Albany, or had any thing to do with said litigation?

Answer. I have not.

Question. Have you ever known defendant previous to this day?

Answer. I have not.

Question. Is the roller you have denominated a pressure roller in model A, applied in the same manner and for the same purpose as the pressure roller described and claimed in the Woodworth patent, or is it placed upon the opposite side of the board, and operating as a bed-plate to determine the thickness of the board, instead of operating to prevent the board from being drawn up by the cutters?

Answer. The roller in model A is placed upon the opposite side of the board from the cutter-wheel, and operates as a bed-plate and roller to keep the plank in its proper place while operated upon by the machine; and also operates to determine the thickness of the board. It does not operate to prevent the board drawing towards the knife.

Question. Do you consider models A and B as representing two separate machines, each performing its own distinct operation?

Answer. If placed apart in separate buildings, they would be separate machines; but if operated together they would be considered one.

Question. Are they not as distinct and separate in their operation when placed in the same building as though in separate buildings?

Answer. Certainly, if they have no connexion with each other.

Question. Will you look at exhibit B, and say whether the means there represented for tongueing and grooving are circular saws?

Answer. They represent cutter wheels, usually called saws. Cutter wheels made thin are usually called saws, and when thicker are commonly called cutter-wheels.

Question. How many are there for forming the tongue?

Answer. The model represents four.

Question. Would you not consider those four saws as a different mechanical arrangement for forming the tongue from the one cutter-wheel described in the Woodworth patent for forming the same thing?

Answer. They are differently arranged from those in the Woodworth machine.

WILLIAM V. MANEY.

On his direct examination being resumed, the witness answers as follows:

Question. After having gone through your cross examination, do you still adhere to the testimony you gave in your direct examination, or do you wish to modify it?

Answer. I wish to state that, in my direct examination, in one place I stated that the planing wheel in model A cut outward from the face of the plank. What I meant to state then was, that that wheel cuts in a direct plane, but when brought in contact with the board in its bent state, the effect is to cut outwards from the finished to the unfinished part of the board.

Question. Do you want to change or modify any other part of said direct examination?

Answer. Not that I now recollect.

WILLIAM V. MANEY.

And I do further certify, that the preceding depositions of the said Charles D. Gould and William V. Maney, were reduced to writing by me, and signed by the said Charles D. Gould and William V. Maney, and that I am not of counsel or attorney for either of the parties to said suit, nor am I interested in the event thereof.

WILLIAM PARMELEE,
Albany county Judge.

ALBANY, *October* 10, 1849.

And I further certify, that on the said 10th day of October aforesaid, at my office in said city of Albany, by consent as well of said plaintiff as said defendant, and in their absence, I proceeded with the examination of the following witnesses named in said affidavit, upon the direct and cross interrogatories hereto annexed.

Circuit court of the United States for the district of Pennsylvania.

JACOB P. WILSON
against
DANIEL BARNUM.

Interrogatories to be administered to a witness or witnesses to be produced and examined before the hon. Parmelee, at his chambers in the city of Albany.

1st direct interrogatory. What is your name; what is your age; where do you reside; what is your occupation or profession; and how long have you been so engaged?

2d direct interrogatory. Are you a practical machinist? If you shall answer "yea," how long have you been so engaged?

3d direct interrogatory. Are you acquainted with a machine known as Woodworth's machine for planing, and also for tongueing and grooving a board, &c.?

4th direct interrogatory. If you shall answer the 3d interrogatory in the affirmative, will you say whether you have read the amended specification for a patent for said machine issued to William W. Woodworth as the administrator of William Woodworth (deceased), dated July 8th, 1845.

5th direct interrogatory. From the reading of said specification do you understand said machine and its mode of operation? If you shall answer yea, will you state the principle and mode of operation of said machine. Please to state fully said principle and said mode of operation.

6th direct interrogatory. Will you look at and examine exhibits A and B now shown to you, and say what the said exhibits are intended to effect?

7th direct interrogatory. Will you state whether, in your opinion, the principle and mode of operation of said exhibits A and B correspond in substance with the principle and mode of operation described in said amended specification granted to said W. Woodworth on the 8th of July, 1845?

8th direct interrogatory. Will you describe A and B, and say wherein they correspond with the Woodworth machine, and whether the devices used in said A and B are mechanical equivalents to those used in the said Woodworth machine?

9th direct interrogatory. Has said exhibit A a combination of pressure rollers, or any analogous device to control the board, &c., and to prevent it from being drawn unto the knife, and does it cut from the finished to the unfinished surface?

10th direct interrogatory. Is the exhibit B a necessary appendage to the operation of exhibit A? If you shall answer in the affirmative, state why.

11th interrogatory. Can a board be planed by exhibit A without first being tongued and grooved by exhibit B? If you answer in the negative, will you state why?

12th interrogatory. Is the cut of the knife in exhibit A in effect the same as it would be by a knife placed upon a cone, except as to the reversed position of the material to the knife, instead of the knife to the material?

13th interrogatory. Will you look at exhibit B, and say whether the combination of cutter wheels with pressure rollers, as therein shown in substance, is or is not the same as the cutter wheels and pressure rollers, combined in said amended specification of the 8th of July, 1845?

14th direct interrogatory. Have you seen a machine which heretofore was used by Betts and Daniel Barnum, or either, in the city of Albany, like exhibits A and B, or either of them; if you shall answer in the affirmative, will you describe that machine, what it was intended to effect, and wherein it corresponded with the exhibits A and B?

15th direct interrogatory. State the time, and where you saw the said machine, referred to in the fourteenth interrogatory; whether you have seen it since; and whether you can say where it is now. State all that you know about it.

SIDNEY V. SMITH, *Att'y for plt'ff.*

Circuit court of the United States, for the eastern district of Pennsylvania.

DANIEL BARNUM
ads.
JACOB P. WILSON.

Cross interrogatories to be administered to a witness or witnesses, to be produced and examined on the part of the plaintiff, before Parmelee, esquire, at his office, in the city of Albany, and the State of New York.

1st. If you shall, in answer to the third direct interrogatory, say you are acquainted with a machine called Woodworth's planing, tongueing, and grooving machine, state when and where in particular you first saw such a machine; and state, also, what means in particular you have had of acquiring a knowledge of such machine, and of the construction and parts thereof?

2d. Have you ever seen, or are you acquainted with, a wheel for planing called the Bramah or face plate wheel; and if yea, have you known the same successfully used for planing boards and planks?

3d. Is not the wheel for planing shown to you in the exhibit, on the part of the plaintiff, a face plate or Bramah wheel? Have you ever known a wheel so constructed, successfully used for planing boards and plank.

4th. What is the mechanical difficulty in the operation of the said face plate wheel, which has hitherto prevented it from being successfully used; and do you know of, or have you ever read of, any device or contrivance by which such difficulty can be obviated or removed; and if yea, state what in particular such device or contrivance is, and where in particular you have read of, or how you acquired a knowledge of, the same?

5th. If in your opinion the mode of operation of said face plate wheel in said exhibit, when used for planing, corresponds in substance with the principle and mode of operation of the machine for planing described in said amended specification, state the particulars in which said machines correspond with each other; and state the grounds of your opinion fully; and state whether any, and if any, what particular part or parts, which compose the machine represented by said exhibit, are like any, and what parts combined, and which form the machine known as the Woodworth planing machine?

6th. Are the circular saws, represented in exhibit B, for tongueing and grooving, usually called cutter wheels; and are they constructed like the cutter wheels described in the said specification annexed to the Woodworth patent?

7th. Are you, or have you been, and when, and how, and to what extent, interested in the said Woodworth's patent, or in any machine or machines, or in the right to run the same, constructed according to the specification thereunto annexed?

8th. If you state you have seen the machines referred to in the fourteenth interrogatory, state how you know any such machine or machines was used by defendant and said Betts, and your means of knowledge particularly. Had the machines you so saw used for tongueing and grooving saws for that purpose, or cutters called S cutters?

EDWD. STOUGHTON,
Counsel for def't.

The said John Gibson being carefully examined, and cautioned, and by me duly sworn to testify the whole truth, and nothing but the truth, to the annexed interrogatories, makes answer and says:

I. To the first direct interrogatory he says. My name is John Gibson; my age is fifty-five years; I reside in the city of Albany; and by occupation am a general mechanic, joiner, plane maker, and operator of machinery generally, and have been so for eighteen years last past.

II. To the second direct interrogatory he says. I am a practical machinist, and have been so engaged for the last twenty years.

III. To the third direct interrogatory he says. He is acquainted with a machine known as Woodworth's machine for planing, tongueing, and grooving boards, &c.

IV. To the fourth direct interrogatory witness answers. I have read the amended specification mentioned in this interrogatory.

V. To the fifth direct interrogatory witness answers. From the reading of said specification, I understand said machine, and its mode of operation; I understand the principles of the machine to be the combination of a number of known mechanical means, or fixtures, for the purpose of planing, tongueing, and grooving, and otherwise moulding boards, plank, &c. The mode of operation is by combining pressure rollers, or some other mechanical contrivance to carry the board forward, and, at the same time, prevent it from being drawn up towards the knives, or vibrating while under their action, with a number of cutting wheels to plane the surface and edges, and to mould any part of them into any form.

VI. To the sixth direct interrogatory he says: I have examined exhibits A and B. They are intended to effect the same object as the Woodworth machine, viz., the planing, tongueing, and grooving of plank; I do not see that anything else could be effected by them.

VII. To the seventh direct interrogatory he says: In my opinion the principle and mode of operation of said exhibits A and B correspond in substance with the principle and mode of operation described in said amended specification granted to W. Woodworth, July 8th, 1845.

VIII. To the eighth direct interrogatory, he says: The machine of which B is the model is a machine for carrying forward by rollers and holding, while under the action of the knives, the board or plank while it is being tongued and grooved. The piece so prepared is then taken and put into the machine A, between moveable guides, for the purpose of preventing the board from being drawn into the knives, or vibrating while under their action; and which is one of the many devices that might be made for that object under Woodworth's specification, and which Woodworth specifies therein. These machines A and B correspond with Woodworth's machine in the combination of rotating cutting wheels, with a device or arrangement to control the plank as above stated. And the devices used in said A and B are mechanical equivalents to those used in said Woodworth's machine.

IX. To the ninth direct interrogatory he says: Exhibit A has a combination of pressure rollers and other analogous means to control the board, &c., and to prevent it from being drawn into the knife, with a rotating plane, and it cuts from the finished to the unfinished surface.

X. To the tenth direct interrogatory he says: Exhibit B is a necessary appendage to the operation of A, because the board cannot be planed or put through the machine A without having first been tongued and grooved in B.

XI. To the eleventh direct interrogatory he says: That a board cannot be planed in exhibit A without first being tongued and grooved by exhibit B, because the means of holding it in A are produced by exhibit B.

XII. To the twelfth direct interrogatory he says: That the cut of the knife in exhibit A is in effect the same as it would be by a knife placed upon a cone, except as to the reversed position of the material to the knife, instead of the knife to the material.

XIII. To the thirteenth direct interrogatory he answers in the affirmative.

XIV. To the fourteenth direct interrogatory he says: I have seen a machine heretofore used by Betts and Daniel Barnum, as joint owners, in the city of Albany, like exhibits A and B together. That machine was intended to plane, tongue, and groove at one operation, and included in itself all the parts in the two exhibits A and B. The board, while being planed, was held and controlled as in model A.

XV. To the fifteenth direct interrogatory he says: I saw that machine about two years ago, at the mill of Richard D. Betts, in North Ferry street, in the city of Albany. I do not know that I have seen it since, nor where it is now. That is all I know about it.

JOHN GIBSON.

On his cross examination the witness answereth the cross interrogatories hereto annexed as follows:

I. To the first cross interrogatory he says: I first saw Woodworth's planing, tongueing, and grooving machine in November, 1831 or 1832, in the city of Troy, in the State of New York; and I have used and sold those machines constantly ever since; and for the last three or four years have manufactured them.

II. To the second cross interrogatory he says: I have seen wheels called the Bramah wheels, and have seen them used. I cannot say I have ever seen the same successfully used for planing boards and plank.

III. To the third cross interrogatory he says: The wheel for planing in exhibit A is not in itself a Bramah wheel, but operates as such in connexion with the contrivance for holding and controlling the board. I have never known a wheel so constructed alone, of itself, successfully used for planing boards, &c. This wheel, in model A, cannot be successfully used for that purpose without the other contrivances.

IV. To the fourth cross interrogatory he says: The mechanical difficulty is that the knives, in the revolution of the wheel, would strike against the board a second time, after it was planed by their first cut, and so spoil the work. I do not know that I have ever read of any contrivance or device by which such difficulty could be obviated or removed.

V. To the fifth cross interrogatory he says: The reasons why said machines correspond are these—the rotating wheels in exhibit A, in combination with the gauges and roller, perform the same operation in the board or plank, and in the same way, and with the same result, as in Woodworth's machine, cutting from the planed to the unplaned surface. I find in B a combination of pressure rollers with cutter wheels, as specified by Woodworth, operating the same way and for the same purpose as in the Woodworth machine.

VI. To the sixth cross interrogatory he says: There are circular saws in exhibit B, for tongueing in part, which are not cutter wheels; and they are constructed like cutter wheels, as described in the said specification annexed to the Woodworth patent.

VII. To the seventh cross interrogatory he says: He has owned the right of said patent for certain territories in New York and Pennsylvania; in the former from the year 1832, and in the latter State since 1845.

VIII. To the eighth cross interrogatory he says: The machine he saw in said Betts' mill, in Albany, had, for the purpose of tongueing and grooving, S cutters much like those in model B. I enjoined the defendant and said Betts from the use of said machine, in a legal proceeding or suit in which said Betts and defendant were the defendants; and the injunction was granted against both by the court. I saw Barnum there around there in the mill, controlling and managing the machine. He was the manager of the machine.

JOHN GIBSON.

Alexander McHench, one of the above named witnesses, being carefully examined, and cautioned, and by me duly sworn to testify in [the] above mentioned cause the whole truth, and nothing but the truth, makes answer to the annexed interrogatories and says:

I. To the first direct interrogatory he says: My name is Alexander McHench; my age is forty-eight years; I reside in the city of Albany; my occupation is that of carpenter, plane maker, and machinist. I have been carpenter, plane maker, and joiner, since I was twenty-one years old, and have worked at mills and machinery more or less during all that time.

II. To the second direct interrogatory he says: I am a practical machinist, and have worked as such considerable during the period above mentioned.

III. To the third direct interrogatory he says, he is acquainted with the machine mentioned in this interrogatory.

IV. To the fourth direct interrogatory he says, he has read the specification mentioned in said interrogatory.

V. To the fifth direct interrogatory he says, that from the reading of said specification he understands said machine and its mode of operation. The principle of the machine is, that the board is carried forward by rollers, or some other mechanical device, and is operated upon by a cutter wheel, or cylinder, with knives attached to it, which dress off the face of the plank, and two revolving cutters that operate on the edges. The mode of operation is, the board is held and moved forward by pressure rollers, and is kept by a roller near the knives from being drawn into the knives. The cut is upwards from the planed to the unplaned surface, which would draw the board up towards the knives unless prevented as above stated.

VI. To the sixth direct interrogatory he says: I have looked at and examined exhibits A and B; I think they are intended to effect the same thing as the Woodworth machine—to plane, tongue, and groove boards, planks, &c.

VII. To the seventh direct interrogatory he says: The result of the operation of exhibits A and B, and of said Woodworth machine, is the same; and the result is obtained in exhibits A and B by the same combination described in the Woodworth specification—the only difference in the principle and mode of operation being, that model A has a disc wheel instead of cylinder cutters.

VIII. To the eighth direct interrogatory he says: Exhibit B takes the rough plank, and puts it through by pressure rollers, forming a tongue and groove on either edge, similar in their construction to Woodworth's specification. The plank is then put into model A, on a bed plate, with gauges in combination with a roller at the back side of the plank, opposite the knife. The plank is bent slightly to keep it away from the knife, and prevent its being operated upon, or cut upon the planed surface of the knife in the revolution of the wheel. In my opinion, the devices used in A and B are substitutes for those used in Woodworth's machine, and producing the same result, though I do not consider them as equal to the latter.

IX. To the ninth direct interrogatory he says: Exhibit A cuts from the finished to the unfinished surface, and has gauges and a roller to control the board, and prevent it from being drawn into the knife.

X. To the tenth direct interrogatory he says, that exhibit B is a necessary appendage to exhibit A, because the plank must be tongued and grooved in B, before it can be put through A to be planed.

XI. To the eleventh direct interrogatory he says, that a board cannot be planed by exhibit A, without first being tongued and grooved by exhibit B, for the reason given in the last answer.

XII. To the twelfth direct interrogatory he says: It is in effect the same, except as to the reversed position of the material as herein mentioned.

XIII. To the thirteenth direct interrogatory he says, the combination of pressure rollers, with cutter wheels, in exhibit B, is, in substance, the same as the cutter wheels and pressure rollers combined in said specification; the only difference being, that in exhibit B the tongued edge of the plank is operated upon by circular saws.

XIV. To the fourteenth direct interrogatory he says: I have seen a machine heretofore used by Mr. Betts in the city of Albany. There was a man there they called Barnum. That machine was *was* like exhibits A and B, in this, that it produced the same results in the same manner as A and B together; that machine was intended to effect the tongueing, grooving, and planing of plank, &c., at one operation. It corresponded with A & B in every respect, except the tongueing apparatus, which was done by a cutting wheel instead of circular saws.

XV. To the fifteenth direct interrogatory he says: I saw that machine about three years ago; first at Betts' mill, North Ferry street, in the city of Albany, and have seen it twice since--the last time about two years ago; I cannot say where it is now. That's all I know about it.

ALEXANDER McHENCH.

To the cross interrogatories hereto annexed the witness answers:

I. To the first cross interrogatory he says: I first saw Woodworth's planing, tongueing, and grooving machine in the city of Troy, State of New York, fifteen years ago, or more; I have worked on or about these machines during all that period, though not steadily during the whole time.

II. To the second cross interrogatory he says, he knows the wheel for planing called the Bramah, or face plate wheel. I have known it used successfully for planing timber, but not boards and plank.

III. To the third cross interrogatory he says: The wheel for planing in the exhibit A is a face plate, or Bramah wheel. The rest of this interrogatory witness answers as in his last answer.

IV. To the fourth cross interrogatory he says, the difficulty is, the knives in their revolution would strike the plank, or board, a second time, and cut or spoil the planed surface. I do not know, nor have read of, any device or contrivance by which this difficulty can be obviated, except in Woodworth's machine and these exhibits.

V. To the fifth cross interrogatory he says, that the machines correspond in these particulars; that the combination of the rotary wheel with the gauges, or rollers, in exhibit A, operate on the board, or plank, in the same manner, and with the like result, as in Woodworth's machine, cutting slightly from the finished to the unfinished surface. I find in exhibit B a combination of pressure rollers with cutter wheels, corresponding with the Woodworth specification in every particular, except as to use of a circular saw for tongueing, as I have before stated.

VI. To the sixth cross interrogatory he says: The circular saws represented in exhibit B are not usually called cutter wheels. They are not constructed like the cutter wheels in the said Woodworth specification, but are so constructed as to effect the same object.

VII. To the seventh cross interrogatory he says: I am not and never have been in any way [interested] in the patent machine or right to run the same in the said interrogatory mentioned.

VIII. To the eighth cross interrogatory he says: He has no knowledge as to such machines being used by the defendant and Betts, except what he has heard. The said machines had, both for tongueing and grooving, cutters, called S cutters.

ALEX. McHENCH.

William Gibson, one of the above named witnesses, being carefully examined, and cautioned, and by me duly sworn, in above mentioned cause, to testify the whole truth and nothing but the truth, makes answer to the annexed interrogatories and says:

I. To the first direct interrogatory he says: His name is William Gibson; his age is forty-four years; his residence is in the city of Albany, and his occupation is that of a plane maker and machinist. That he has been a plane maker since the year 1840, and a machinist for 12 years.

II. To the second direct interrogatory he says: I am a practical machinist, and have been so as above stated in my last answer.

III. To the third *cross* interrogatory he answers in the affirmative.

IV. To the fourth direct interrogatory he says: He has read said specification.

V. To the fifth direct interrogatory he says: I think I understand said machine and its mode of operation. The principle of said machine is a combination of certain mechanical powers or means, for the purpose of smoothing and moulding the surface and edges of plank or boards; and the mode of its operation is by combining pressure rollers, or any other analogous device, to carry on and control the plank, with cutter wheels to plane the surface and tongue and groove the edges—the operation of the pressure rollers being to prevent the board or plank from being drawn towards the knives.

VI. To the sixth direct interrogatory he says: Exhibits A and B are intended to effect the same thing that is done in and by the Woodworth machine.

VII. To the seventh direct interrogatory he says: The way the work is done and the result produced is the same in these exhibits A and B, and in the machine as described in the amended Woodworth specification, excepting the mode of forming the tongue, which is done by circular saws instead of cutters; otherwise the mode of operation is the same.

VIII. To the eighth direct interrogatory he says: B is a machine for tongueing and grooving board and plank, by means of pressure rollers, cutting wheels, and circular saws; and A is a machine for planing the surface, consisting of gauges to hold the board, and a pressure roller behind the board and opposite, where the knife strikes it, in combination with a rotary plane. They correspond with the Woodworth machine, because they cut from the finished to the unfinished surface, which is shown by the shavings or chips thrown off being similar and wedge shaped in both machines; and because A and B, taken together in combination, operation, and result, are the same substantially as the Woodworth machine. The devices used in A and B are substitutes for those in Woodworth's machine; but I should not think them equally practicable.

IX. To the ninth direct interrogatory he says: Exhibit A has a pressure roller and a device to control the board and keep it from the knives, and it cuts from the finished to the unfinished surface.

X. To the tenth direct interrogatory he says: Exhibit A would be of no use without B, because the tongue and groove must be formed before the plank so passes into A to be planed or reduced.

XI. To the eleventh direct interrogatory he says: It cannot, and for the reason stated in his last answer.

XII. To the twelfth direct interrogatory he says: The effect produced is the same, except as to the reversed position of the material to the knife, instead of the knife to the material.

XIII. [To the thirteenth direct interrogatory he says:] The combination of cutting wheels with pressure rollers in exhibit B is the same in substance as the cutter wheels and pressure rollers combined in the specification mentioned in this interrogatory.

XIV. To the fourteenth direct interrogatory he says: I have seen a *a* machine, heretofore used by Betts and Barnum in the city of Albany, like exhibits A and B, so far as the cutting is concerned, but the forwarding motion was different. It consisted of three cutter wheels and gauges and roller. It was intended to plane, tongue, and groove plank, &c., at the same time. It corresponded in every respect with exhibits A and B, except the substitution of circular saws in B for forming the tongue.

XV. To the fifteenth direct interrogatory he says: I saw this machine some two or three years since at Betts' mill, or Betts' and Barnum's, North Ferry street, Albany. I have never seen it since, and do not know where it is now; and that is all I know about it.

WM. GIBSON.

To the cross interrogatories hereto annexed the witness answers:

I. To the first cross interrogatory he says: He first saw Woodworth's machine at John Gibson's mill, Water street, Albany, in February,

2511.

1836. I have worked with and constructed said machines for twelve years past.

II. To the second cross interrogatory he says: I have seen a wheel which was represented to me as the Bramah or face plate wheel. I have never known it successfully used for planing boards.

III. To the third cross interrogatory he says: The wheel in exhibit A for planing is a face plate or a Bramah wheel. I have never known a wheel so constructed successfully used for planing board and plank.

IV. To the fourth cross interrogatory he says: The mechanical difficulty was the back lash, or the knife or cutter marring the work after it was finished. I do not know, nor have I ever read, of any device or contrivance to obviate or remove this difficulty.

V. To the fifth cross interrogatory he says: The material point in which the wheel in exhibit A corresponds with the Woodworth machine is in their cutting from the finished to the unfinished surface—thereby preserving the edges of the cutters or planes. Exhibit B is similar, in having a combination of pressure rollers and a cutter wheel just like the Woodworth machine, except as to the circular saws used for the tongueing. The tongue, so formed by the circular saws, must be imperfect and inferior to those formed by a cutter wheel.

VI. To the sixth cross interrogatory he says: The circular saws in exhibit B are not usually called cutter wheels. These saws are not constructed like the cutter wheels in Woodworth's machine.

VII. To the seventh cross interrogatory he says: I am not, nor have ever been, interested in the patent machines, or in the right to use them, mentioned in this interrogatory.

VIII. To the eighth cross interrogatory he says: He knows said machine was used by Betts & Barnum only from report. The machines did not have saws for tongueing and grooving, but has S cutters.

WM. GIBSON.

George Rork, one of the above named witnesses, being first carefully cautioned, and examined, and by me duly sworn in above cause to testify the whole truth and nothing but the truth, makes answer to the annexed interrogatories, and says:

I. To the first direct interrogatory he says: My name is George Rork; my age is thirty years; I reside in the city of Albany; I am by occupation a machinist, and have been so engaged for 13 years, and steadily for the last ten years.

II. To the second direct interrogatory he says: He is a practical machinist, and as such has been steadily engaged for the last ten years.

III. To the third direct interrogatory he says: I am acquainted with Woodworth's machine for planing, tongueing, &c., boards.

IV. To the fourth direct interrogatory he says: He has read the specifications mentioned in this interrogatory.

V. To the fifth direct interrogatory he says: From reading said specification I understand said machine and its mode of operation. The principle is, as I understand, the planing the surface and tongueing and grooving the edges of boards, &c., by a combination of mechanical powers or means; and the operation is by means of pressure rollers, or other similar device, to hold and carry on the board, &c., and keep it from being drawn up by the knife, together with cutter wheels and rotating planes or cylinders to tongue, groove, and plane the surface and edges.

VI. To the sixth direct interrogatory he says: I have looked at and examined exhibits A and B, and they are intended to effect the same things as the Woodworth machine.

VII. To the seventh direct interrogatory he says: In my opinion the principle and mode of operation in A and B correspond with the principles and mode of operation described in said specification substantially.

VIII. To the eighth direct interrogatory he says: Exhibit A has a rotating wheel, in combination with a pressure roller and guides to bend the board, so as to keep the knives from marring the finished work, and so keep the board from being drawn into the knife. B has a combination of pressure rollers with cutting wheels on the one side, and a circular saw on the other for tongueing the board, &c. They correspond with the Woodworth machine in all respects pretty much, except the use of said circular saws instead of cutting wheels for tongueing. I consider the devices used in A and B mechanically equivalent to those used in said Woodworth's machine.

IX. To the ninth direct interrogatory he says: Exhibit A has a combination of a pressure roller, and a device analogous to pressure rollers, to control the board and keep it from being drawn into the knife, and cuts from the finished to the unfinished surface.

X. To the tenth direct interrogatory he says: Exhibit B is a necessary appendage to the operation of exhibit A, because the plank must be tongued and grooved in B before it can be submitted to the operation of planing in A.

XI. To the eleventh direct interrogatory he says: That a board cannot be planed by A without being tongued and grooved first in exhibit B, because the tongue and groove are necessary to hold the plank or board in A while subjected to the operation of planing.

XII. To the twelfth direct interrogatory he says: The effect is the same, except as to the reversed position of the stuff to the knife, instead of the knife to the stuff.

XIII. To the thirteenth direct interrogatory he says: The combination of cutter wheels with pressure rollers, in exhibit B, is substantially the same as the combination of cutter wheels and pressure rollers in the said specification; circular saws being used in the former instead of cutter wheels for tongueing.

XIV. To the fourteenth direct interrogatory he says: I have seen a machine similar to exhibits A and B combined, in the city of Albany, which was said to have been used by Betts & Barnum. That machine was intended to effect the planing, tongueing, and grooving of plank and boards, and it corresponded in every respect with A and B combined, except the use of circular saws for tongueing were substituted in B for cutter wheels.

XV. To the fifteenth direct interrogatory he says: I first saw that machine about 2 years ago at Bett's mill, North Ferry street, Albany. I have not seen it since, and do not know where it is now; and that is all I know about it.

GEORGE RORK.

To the cross interrogatories hereto annexed, the witness answers:

I. To the first cross interrogatory he says: I first saw [the] Woodworth machine for planing, tongueing, &c., thirteen years ago this fall, at the mill of John Gibson, in the city of Albany, and I have been running and had charge of said machines, and helped to build new ones and repair old ones for the last nine or ten years steadily.

II. To the second cross interrogatory he says: I have seen, but cannot say I am acquainted with, the Bramah or face plate wheel. I have never known it to have been successfully used for planing boards or plank.

III. To the third cross interrogatory he says: I hardly remember enough about the Bramah or face plate wheel to give a decided answer to this interrogatory.

IV. To the fourth cross interrogatory he says: What I suppose to be the difficulty is the back lash of the cutters on the wheel; that is, their cutting on the surface, finished by the first stroke, a second time in their revolution on the wheel—thus spoiling the work. I never knew or read of any device or contrivance to obviate or remove that difficulty except in this machine A, by the gauges and outside roller.

V. To the fifth cross interrogatory he says: The operation of the wheel in exhibit A for planing corresponds with the machine for planing described in said specification, in this, they both perform the same operation with the same result; the devices are analogous for holding and controlling the board, and the cutters in this exhibit being on a wheel, and in the Woodworth machine on cylinders, but both operating in the same way—cutting upwards from the finished to the unfinished surface; the lower part of the cut being the same in both, but the upper part slightly different.

VI. To the sixth cross interrogatory he says: The circular saws in B for tongueing, &c., are not usually called cutter wheels; the construction is not like that of the cutter wheels in said specification.

VII. To the seventh cross interrogatory he says: I am not, nor have I been, interested in the patent machines, or right to run the same, in this interrogatory specified.

VIII. To the eighth interrogatory he says: He does not know that the machines spoken of by him as having been seen by him at Betts' mill in the city of Albany was ever used by Betts and the defendant Barnum, together of witness's own knowledge, but he has heard so from report. The machines I so saw used for tongueing and grooving had not saws for that purpose but S. cutters. GEORGE RORK.

And I further certify, that the preceding depositions of the said John Gibson, Alexander McHench, William Gibson, and George Rork, were reduced to writing by me, and signed by them respectively, and that I am not of counsel or attorney for either of the parties to said suit, nor am I interested in the event thereof.

WM. PARMELEE, *Albany county Judge*.

Albany, 10th October, 1849.

Exhibit C.

The paper hereto annexed is exhibit C, referred to in the examinations taken before me in [the] above cause, at the city of Albany, the 10th day of October instant.

WM. PARMELEE, *Albany county Judge*.

Albany, 10th October, 1849.

The United States of America, to all to whom these letters patent shall come.

Whereas Daniel Barnum and Thomas J. Wells, of New York, N. Y., have alleged that they have invented a new and useful improvement in planing machines, (the said Wells having assigned all his right, title, and interest in said improvement to the said Barnum,) which they state has not been known or used before their application; have made oath that they are citizens of the United States; that they do verily believe that they are the original and first inventors or discoverers of the said improvement, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose—

These are therefore to grant, according to law, to the said Daniel Barnum, his heirs, administrators, or assigns, for the term of fourteen years from the fourteenth day of March, one thousand eight hundred and forty-nine, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said D. Barnum and T. J. Wells, in the schedule hereunto annexed, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

Given under my hand at the city of Washington, this thirteenth day of March, in the year of our Lord one thousand eight hundred and forty-nine. and the independence of the United States of America the seventy-third.

THOMAS EWING,
Secretary of the Interior.

Countersigned, and sealed with the seal of the Patent office.

[SEAL.] EDMUND BURKE,
Commissioner of Patents.

Exhibit C—*W. P.*

[For diagram (figs. 1 and 2) see original, page 297.]

Schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known, that we, Daniel Barnum and Thomas J. Wells, both of the city, county, and State of New York, have invented and applied to use new and useful improvements in machinery for planing boards and plank, and we hereby declare the following descriptions, with the accompanying drawings, to be a full and clear description and representation of the same: The same letters refer to the same parts in the different figures; fig. 1 is a perspective representation of the machine, with its combinations; fig. 2 is a ground plan, or top view, of a part of the machine, showing the curved fence and the screw clamps, or gauges, I, (J cannot be seen in this figure,) and also the disk, E, with the gouge cutters, G, upon the periphery; the finishers, F, being true with the face of the disk, cannot be seen. Fig. 1, A, shows the main frame, B, the standard for the support of the shaft, C, upon which is seen the main driving pulley, D, and also the face disk, E, fitted with one or more long or broad smoothing knives, or finishers, F, the edge of which should form a line at right angles to the line of the shaft, C; the disk is also fitted with six, more or less, deep cutting gouges, placed upon the periphery, for the purpose of cutting off the roughest part. The gouges act, first, to chip or hew away the wood roughly, but to a flat surface, and then the finishers follow, and reduce it to a smooth plane. This is accomplished by their being placed near the centre, so that they revolve in a rather smaller radius, and thus act upon the wood after the gouges have finished. The curved fence H is constructed with a slight curve at the centre of the disk, on two lines, at an angle with the line formed by the face of the disk, as seen in fig. 2, and diverging therefrom each way to the ends of the machine. I and J are gauges, or " screw clamps with proper contrivances," adapted to both lines and to the curve of the fence, and whether they are fitted with a tongue and groove, or any other device, to act upon the edges of the board, they must extend beyond the disk on each line of the fence, both in front and rear, as far as may be necessary to hold the board on the front line as it enters the machine, and also on the rear line of the fence as it leaves the machine. I and J are so constructed as to have a continued action upon the edges of the board from one end of the gauges to the other, so as to spring and to present each portion of the board to the action of the finishers F, on the disk on a curve, as the board passes through the machine. J is a fixture on the fence, as seen in the drawings and model, fitted with a tongue to operate as a clamp upon the under side of the groove in the board as it is made to slide behind the tongue and between it and the fence. I is fitted with a flange to overlap and clamp the tongue on the board in the same manner, and is also a fixture held firmly by screws to the cross slides T; these cross slides T being adjustable, in order to accommodate or to keep the gauge or clamp I in contact with the different widths of boards; for this purpose weights may be attached to the cross slides T, as seen in the drawings and model, or any other convenient means may be used; this will be well understood; these gauges or clamps have neither weights nor springs to act by pressure upon the board; they are literally "screw clamps with proper contrivances," and they are so contrived as to clamp the board upon the edges and to hold it firmly, producing a new result; the springing a board and presenting each portion of it as it progresses through the machine to the action of the finishers on a curve, for the purpose of being planed, and also preventing the finished portion of the surface from coming in contact with the knives on the back part of the wheel. K and K are connecting bars between the uprights L and L, and the double cams P. M and M are each a pair of eccentric clamps constructed upon the principle described and shown in the specification and drawings of Thomas J. Wells' patent, dated April 11th, 1846; they are shown in the drawings with a light spring on the back to keep them in a position to act; their eccentric form cause them to clamp the board on the forward motion, and to relax their hold on the return motion; they are placed upon the top of the uprights L and L, and are made to move alternately, producing a continuous motion. The gauge J extends the length of the line in front, and serves as a perpendicular guide to L and L, and also as a guide and support to the board upon its edge, and to direct it between the clamps M and M into the machine; the parallel motion of the clamps M and M is produced by means of the rockers N and N, upon which the uprights L and L are seen to rest; the segments of the circles of N and N have their centre at M and M; consequently, when M and M are made to vibrate on N and N, a parallel motion is produced without ways or slides, as seen in the drawings and model. The connecting bars K and K have each a friction roller fitted to one end, which rollers are made to revolve within the grooves of the double cams, as seen at O. These grooved cams may be called female cams; the rollers O, acting alternately upon the outer and inner side of the grooves, produce an arbitrary reciprocating motion; one of the double cams P and rollers O, being upon the opposite side of P, cannot be seen in the drawing; they are, however, the same in all respects as those which are seen. These cams are so proportioned that two-thirds of the revolution is taken up in giving the forward motion, and one-third on the return motion; the position of the double cams are reversed, that is, one is a half revolution in advance of the other, so that the one is giving a forward motion whilst the other is giving a return motion; which being made quicker than the forward motion, affords time for the receding clamp to return and take hold of the board and commence its forward motion before the preceding clamp lets go its hold or commences its return.

The arrangement and combination of the double cams P, the eccentric clamps, and the rockers N and N, produce an uniform and continuous forward parallel motion, without ways or slides, and dispensing with all friction and expense in their construction, and by the combination of means which has not been before known or used. R and S shews the feed pulley and belt which gives motion to the feeding apparatus. The planing wheel, or face disk E, is constructed upon the principle of the Bramah wheel, which was patented in 1802, and described in Ree's Encyclopedia as a face disk, at right angles to the axis of motion, with two sets of knives. The relative position and operation of both sets, as well as the form of tools used, are thus described in Bramah's language: "Instead of common tools, bent knives, spoke shaves, or deep cutting gouges are used for cutting off the roughest part, and planes of various shapes and constructions, as the work may require, are applied to follow the former in succession, under the same operation, and which latter I call finishers." The "work" to be done with our improvements "require" the "planes" or "finishers" to be constructed of sufficient length to extend across the entire board, and they are placed upon the disk at about an angle of fifteen degrees from a radial line from the centre of the disk; they are "also placed nearer the centre, so that they revolve in a rather smaller radius" than the gouge cutters G on the periphery, and thus act upon the wood "after the gouges have finished" cutting off the roughest part. The position and angles of the finishers F, relatively with the disk E, and the board when sprung around the fence, are such that the smooth finish of each cut is given at or nearly in a vertical line from the centre of the disk, at or nearly at right angles with the grain of the wood and the whole width of the board. This effect is produced by means of the curved fence, against which the board is to be held and sprung to a corresponding curve, and by the progressive motion of the board, and as it moves by the disk, a small portion is left by the gouges G to be taken off by the finishers E, at each stroke, at or nearly at the centre of the curve, while cutting with the grain, leaving no circular marks across the board, as the circular marks of each preceding cut is taken off by the succeeding cut of the finishers in the manner above described, by which means an absolutely level surface is produced, finished in a manner far superior to that of any other planing machine known. The curved fence used in these improvements is formed, as seen in fig. 2, on two lines, at an angle with the face of the disk E. This form of fence requires the board to be sprung and presented to the action of the finishers on a curve. The means used to hold the board must be such as not only to hold it when sprung, but they must also be adapted to the end of springing each portion of the board as it approaches the point of operation, commencing at the end as it enters the machine, and changing the curve in the board gradually from one end to the other as it progresses through the machine. Each portion of the board is thus made to assume the same relative position with the finishers, while it is being operated upon by them, so that an uniform and even surface is produced the entire length of the board; and for this purpose the screw clamps or gauges, with proper contrivances to act upon the edges, embracing the entire portion of the board which is sprung, and holding it at the point of operation, are used in contradistinction to the pressure rollers, as applied and used by Woodworth, and the difference between them is strikingly manifest, for the gauges are firmly held by screws, and act upon the edge arbitrarily by clamping it; the rollers act only by pressure upon the face of the board, by weighted levers or springs. The gauges act upon the edges to spring the board between the disk and fence, while the knives are rotating over and operating to plane the surface; while the rollers can only be placed across the surface of the board, one of each being placed in front and rear of the disk, they (the rollers,) therefore act on different lines of the fence, without any means to control, or power over the board, after leaving the front roller, to curve it while it is passing the planing wheel around the fence to the roller on the rear line of the fence. The correctness of the differences, as above recited, will be demonstrated by an examination of the curved fence and gauges in combination with the disk, as shewn in fig. 2. The fact that pressure rollers cannot possibly be used as a substitute for the gauges or clamps, in combination with a face wheel or disk, will also be seen from an examination of this figure, in the results which must be obtained were rollers used. To illustrate this, we will suppose the gauges I and J removed, (J being under I in this fig. is not seen) and rollers substituted in their place; as they act only on the face of the board, the rollers must be placed so as to clear the periphery of the disk; this would place them on each line of the fence about at the point where the cross slides T are seen; now, suppose a board or plank of sufficient thickness to fill the space between the fence and disk at the centre or shaft, is placed upon the front line of the fence,—it is plain that unless the rollers can be made to change the line of motion of the board or plank, it must or would continue on the front line directly against the cutters on the back part of the disk, and therefore could not reach the roller on the rear line of the fence. This result must inevitably follow the introduction of each and every board or plank put into the machine with rollers as a means of holding the board, and every board or plank thus attempted to be planed would be spoiled. The impossibility, therefore, of producing a successful result with rollers as a means of holding the board in these combinations, demonstrates the entire want of analogy (which is by some said to exist) between the gauges or screw clamps with proper contrivances, which are used in these combinations, and the pressure rollers described and claimed in the Woodworth patent. The face disk with gouges and finishers, and the screw clamps with proper contrivances, were patented by Bramah in 1802. We do not claim the original machine, except in combination with our improvements. Bramah used short finishers, leaving the surface marked in circular scores; we use long finishers, by which means, (the board being curved) we finish the surface with the grain, leaving no circular marks. Bramah's finishers being short and placed near the gouges upon the periphery, can only finish the surface while cutting from one edge to the other in circles; our finishers being long, embrace the whole width of the board, coming in contact with the surface on the curve nearly at right angles, each cut finishing a small portion with the grain, and each portion of the surface, when thus finished by each cut, must of necessity be parallel to the face of the disk.

Having fully described the parts and combinations of parts of our invention, with the modes in which we contemplate applying the same: What we claim as our invention, and desire to secure by letters patent, is:—The combination, arrangement, and construction of the double cams P, the eccentric cams M and M, and the rockers N and N, for the purpose of producing an uniform continuous and parallel feed motion, without rollers, rack and pinions, endless chains, or any common device, by which means we produce a parallel feed motion without the expense and friction of ways or slides whether applied to planing machines, or for any other purpose substantially as described and shown.

Also the construction of the fence H, or any analogous device against which to spring or curve a board to be planed in combination with screw clamps or gauges with proper contrivances, I and J, or any other means adapted to the curve on the fence H, extending each way from the centre of the curve and disk, embracing each line of the fence as far as may be necessary for the purpose of receiving the board or plank, by clamping or otherwise acting upon the edges while it is on the front line of the fence, holding and directing it around the curve, springing and presenting each portion of the board successively to the action of the finishers on the disk on a curve, and also preventing the finished portion of the surface from coming in contact with the knives on the back part of the disk as it passes out of the machine on the rear line of the fence, substantially as described and shown.

Also, the combination of the curved fence H, and gauges I and J, or any other device for springing and presenting a board or plank on a curve to the action of planes or finishers on a disk, with the disk E and the long or broad finishers F, to extend across the board the entire width and at right angles with the shaft C, for the purpose of planing boards and plank when presented on a curve, thereby finishing them while cutting with the grain and leaving no circular marks or scores across the board or plank, in the manner hereinbefore substantially described and shown.

The effects of these improvements are the production of a new parallel feed motion, without the friction and expense of ways and slides, and also a new method or principle of presenting a board or plank to the action of the knives or finishers revolving on a disk on a curve, by which means the finished surface is made while the finishers are cutting with the grain of the wood. Thus converting the disk or Bramah wheel, which has hitherto been comparatively of little worth, into a most useful and valuable machine. The tendency of the planing operation with the disk is to move the board edgewise in the same plane in which the knives revolve, in contradistinction to the Woodworth cylinder, which tends to lift the board directly up from its bed as it cuts up and out from the reduced or planed to the unplaned surface, as declared in said Woodworth patent.

DANIEL BARNUM.
THOMAS J. WELLS.

HENRY Z. DREW, }
CHAS. W. SMITH, } Witnesses.

Deposition of W. W. Woodworth.

United States of America, southern district of New York.

City and county of New York, ss.

Be it remembered, that on the 25th day of September, in the year of our Lord one thousand eight hundred and forty-nine, I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress, entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of [the] United States," passed Feb. 20th, 1812; and the act of Congress entitled "An act in addition to an act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed March 1st, 1817; and the act entitled "An act to establish the judicial courts of the United States," passed Sept. 24th, 1789, did call and cause to be and personally appear before me, at my office, No. 61 Wall street, in the city of New York, in the said southern district of New York, in the State of New York, William W. Woodworth, to testify and the truth to say, on the part and behalf of the plaintiff, in a certain suit or matter of controversy now depending and undetermined, in the circuit court of the United States, for the eastern district of Pennsylvania, wherein Jacob P. Wilson is plaintiff, and Daniel Barnum defendant. And the said witness being of lawful age, and having been by me first cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, in the matter of controversy aforesaid, I did carefully examine the said witness, and he did thereupon depose, testify, and say as follows, viz:

Circuit court of the United States, for the eastern district of Pennsylvania.

JACOB P. WILSON }
vs. } In equity.
DANIEL BARNUM. }

Depositions of witnesses taken de bene esse before Charles W. Newton, a commissioner of the United States for the southern district o New York, at his office, No. 61 Wall street, in the city of New York September 1, 1849.

William W. Woodworth, of Hyde Park, of the county of Dutchess, and State of New York, being duly sworn, was examined and testified as follows:

Q. Will you state your age and profession, and place of residence?

A. I am 40 years of age, and by profession a counsellor-at-law; reside at Hyde Park, Dutchess county.

Q. Were you in any way related to the late William Woodworth, the inventor of a machine for the planing, tongueing, and grooving boards and plank, and if yea, in what manner?

A. Yes, he was my father, and I was his only son.

Q. Do you know of your father having been engaged upon said invention; and if yea, will you state at what time and where; and how you were engaged at the time; and what were your means of knowledge? Please to state what were your means of knowledge as near as you can recollect.

A. Yes, I do know of my father being engaged in said invention in the city of Hudson, as near as I can recollect in the winter of 1826 or '27. I was then a student of law; my father's hand became very much injured, by which he lost three fingers of his left hand. Doctor White of the city of Hudson was his physician, he was confined to his bed and room for some time; I was with him a portion of the time, and helped [to] tend him. When he was able to sit up he commenced making drawings of the planing machine; he would draw in his chair when sitting up; when he became exhausted he would then go to bed and draw there; have his paper placed on a server; he completed his drawings, which were similar to the ones I now hold in my hand, and marked exhibit A. Not having the means of building the machines and getting a patent, he then made an arrangement with James Stiving then a member of Congress, to furnish him means to obtain a patent and erect a working machine. A machine was afterwards built in the city of Hudson, under the superintendence of my father, by one Daniel Dunbar; the machine was worked by horse power; it planed, and tongued, and grooved boards sufficiently to satisfy me of the practicability and utility of the machine.

W. W. WOODWORTH.

Sworn before me this 25th day of September, 1849.

CHAS. W. NEWTON,
U. S. Com'r.

The complainant's counsel, G. G. Sickel, esq., requested that the witness should sign his direct testimony, and stated to the commissioner, and the counsel for the defendant, that the complainants would not pay or be responsible for the cross examination of the witness. The defendant himself being present, proposed by his counsel, M. G. Harrington, esq., to proceed with the cross examination of the witness, unless the commissioner will abide the event of the suit for his costs in taking the testimony. The counsel for the complainant now tenders the witness to the counsel of the defendant and the defendant for cross examination.

The *counsel* now here states, that he will not proceed to take the cross examination of said witness, unless one or the other of the said parties, complainant or defendant, agree to become responsible for the taking down of said cross examination.

The counsel for the defendant now proposes to cross examine the witness, and states on behalf of the defendant that if the defendant is by law bound to pay the commissioner for such cross examination, he (the defendant) will do so.

The commissioner here states, that he will adhere to the same rule as above stated by him, and unless he has some security for the future payment of said cross examination, he will not proceed to take it down.

On motion of complainant's counsel, the examination in this cause stands adjourned to Oct. 1st, at 3 o'clock.

October 1st, 1849. The examination was adjourned by consent of the counsel for the respective parties, until the 3d day of October, 1849, at 3 o'clock, p. m.

October 3d, 1849. Examination adjourned to the 1st inst., at 3 o'clock.

Wm. W. Woodworth, a witness heretofore examined on the part of complainant, to which the objection, &c., above stated was made, was, on the 18th day of October, procured by the complainant's counsel, G. G. Sickles, esq., and offered to the defendant's counsel, M. G. Harrington, esq., for cross examination at the expense of the plaintiff. The said counsel thereupon declined to cross examine said witness.

UNITED STATES OF AMERICA,
Southern district of New York, ss.

I, Charles W. Newton, a commissioner duly appointed by the circuit court of the United States, for the southern district of New York, in the second circuit, under and by virtue of the acts of Congress, entitled "An act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States," passed Feb. 20th, 1812; and the act of Congress, entitled "An act in addition to an act entitled 'an act for the more convenient taking of affidavits and bail in civil causes depending in the courts of the United States,'" passed March 1st, 1817; and the act entitled "An act to establish the judicial courts of the United States," passed Sept. 24th, 1789, do hereby certify, that the reason for taking the foregoing deposition is, and the fact is, that the witnesses were examined by consent of the counsel for the respective parties under the act of Congress, &c., de bene esse.

I further certify, that a notification of the time and place of taking the said depositions was made out and served on the counsel for the defendant, as also the defendant to be present at the taking of the deposition, and to put interrogatories if he or they might think fit.

I further certify, that on the 25th day of September, 1849, I was attended by the respective counsel for the parties herein mentioned, and by the witness, who was of sound mind and lawful age; and the witness having been by me carefully examined, and cautioned, and sworn,

afo
Tr
Cr
Re
Jos

lepo-

ns at
, and
wit-
vorn ,

to testify the whole truth, the deposition was by me reduced to writing in the presence of the witness, who subscribed the same in my presence. I have retained the said deposition in my possession for the purpose of transmitting the same by mail to the court for which the same was taken.

I further certify, that I am not of counsel or attorney for either of the parties in said deposition and caption named, or in any way interested in the event of the said cause named in the caption.

In testimony whereof I have hereunto set my hand and seal, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

CHAS. W. NEWTON, [L. S.]
United States Commissioner
for the southern district of New York.

UNITED STATES OF AMERICA,
Southern district of New York, ss.

I, Alexander Gardiner, clerk of the circuit court of the United States of America, for the southern district of New York, second circuit, do hereby certify, that I am well acquainted with the handwriting of Charles W. Newton, whose name is subscribed to the annexed deposition, and that the signature to the same is in his proper handwriting. And I do further certify, that he was, at the time of signing the same, a commissioner of the circuit court of the United States of America, for the southern district of New York.

[L. S.] In testimony whereof I have hereunto subscribed my name, and affixed the seal of the said circuit court, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of these United States the seventy-

ALEXANDER GARDINER.

[For diagram see original, page 308.]

Jury.

Afterwards, to wit, at a session of the same court, holden at Philadelphia aforesaid, before the judges aforesaid, on the seventeenth day of October, A. D. 1849, come the parties aforesaid, by their attorneys aforesaid; and a jury being called, likewise come, to wit: Alexander Trotter, John Lednum, Robert Laverty, Joseph S. Riley, Thomas Craighead, jr., Joshua Lippencott, sr., Alexandria H. Hood, John Reynolds, George S. Roberts, George Prince, Andrew Graydon, and Joseph Geisz, who are respectively sworn or affirmed, &c.

[REC CCIX, D. T. 1849.]—21

depo-

was at
ed, and
the wit-
sworn,

to testify the whole truth, the deposition was by me reduced to writing in the presence of the witness, who subscribed the same in my presence. I have retained the said deposition in my possession for the purpose of transmitting the same by mail to the court for which the same was taken.

I further certify, that I am not of counsel or attorney for either of the parties in said deposition and caption named, or in any way interested in the event of the said cause named in the caption.

In testimony whereof I have hereunto set my hand and seal, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine.

CHAS. W. NEWTON, [L. S.]
United States Commissioner
for the southern district of New York.

UNITED STATES OF AMERICA,
Southern district of New York, ss.

I, Alexander Gardiner, clerk of the circuit court of the United States of America, for the southern district of New York, second circuit, do hereby certify, that I am well acquainted with the handwriting of Charles W. Newton, whose name is subscribed to the annexed deposition, and that the signature to the same is in his proper handwriting. And I do further certify, that he was, at the time of signing the same, a commissioner of the circuit court of the United States of America, for the southern district of New York.

[L. S.] In testimony whereof I have hereunto subscribed my name, and affixed the seal of the said circuit court, this 13th day of October, in the year of our Lord one thousand eight hundred and forty-nine, and of the independence of these United States the seventy-

ALEXANDER GARDINER.

[For diagram see original, page 308.]

Jury.

Afterwards, to wit, at a session of the same court, holden at Philadelphia aforesaid, before the judges aforesaid, on the seventeenth day of October, A. D. 1849, come the parties aforesaid, by their attorneys aforesaid; and a jury being called, likewise come, to wit: Alexander Trotter, John Lednum, Robert Laverty, Joseph S. Riley, Thomas Craighead, jr., Joshua Lippencott, sr., Alexandria H. Hood, John Reynolds, George S. Roberts, George Prince, Andrew Graydon, and Joseph Geisz, who are respectively sworn or affirmed, &c.

And upon the trial of the issue aforesaid, the following testimony was adduced, to wit:

Notes of evidence taken on trial.

Mr. Harvey Waters sworn: " I am a practical machinist. I am pretty well acquainted with the Woodworth machine, and have seen it [in] operation. I am also pretty well acquainted with the Barnum machine, though I have not had a long acquaintance. I am familiar with the operation of machinery driven by power; machinery has been my trade ever since I was seventeen years old, and I have done little else in my life from that time to this, about twenty-seven or eight years. I understand that the object of this machine is to take boards from the saw mill and reduce them to a situation fit for flooring and ceiling; reducing them to a uniform thickness and leaving them with a suitable surface upon one or both sides, with or without a tongue and groove, so as to make a level surface upon both sides, for that kind of work a uniform thickness is desirable, and to make a level surface it is necessary. If these machines are in a proper condition, they finish the board with a uniform thickness; the process of using these machines is in both the same, as they are both self-acting machines, and you only put the board to it; then one of these rollers in this machine feeds the board forward, the board is sent forward to the cutter; they not only do that, but if the board is warped they reduce it to a line, and it is so presented on this bed piece, which controls the thickness of the board, beginning where it leaves off; the cut lash comes nearly under the centre of this axis, cutting in a curved line as you see here, cutting from the finished to the unfinished portion. The board is kept firmly down till it is presented to the other cutters. The work is done in such a manner, that when you nail it down upon a level bed it presents all the requisites, instead of the old fashioned way of planing inside of one, and grooving this parallel to this face. These rollers when they get hold of one board, move it out of the way, and keep it level in the bed, and prevent the rising of the board; if there is a jar it dulls the tools and makes bad work. The board advances against the cut; for if it advanced in the same direction it would cut on the grit. The tongueing and grooving tool is of the same kind as that, only varying in form; they are both rotating cutting tools; the one has the same relative position to the edge that the other has to the sides; the one is a wide chisel, and the other is three narrow chisels or perhaps three adzes; but if you call the one a chisel, you call the other a chisel by analogy. The machine is regulated by an adjustment of one or the other of these tools. The board, when it is nailed down, will be in the position in which it was cut; the board is cut on its surface by these knives, whose revolutions form a cylinder. It is tongued and grooved by the smaller knives, and passes out through the two rollers a finished board."

Mr. Latrobe. " How is that accomplished in the Barnum machine?"

Mr. Waters. " It is necessary to get two tongues or two grooves, or a groove on one side and a tongue on the other, to go upon; because you must have an outside pressure to prevent the board being drawn to the knife. The knife sweep from the surface of the board is not so acute in the one machine as in the other proportionally. You could not use the pressure upon the outside of the board to keep it upon a firm bearing on the bed, until there was a groove or rabit made to keep it bearing below the sweep of the knife, for the knives in the sweep take up all the room. You must be enabled to get a bearing below the finished surface of the board. I do not see any pressure upon these rollers in this model, which appears a pretty good one of the machine that I saw at Southwark, but there were pressure rollers in that machine. Whether that was Mr. Barnum's machine or not, I cannot say. There was another difference; that saw was, I think, in two or three parts instead of being one; which was a precise but not an essential difference. This model should have edge guides and yielding pressure upon these rollers. I beg your pardon, there is an edge guide upon the inside of the model. I did not see that; there is no yielding pressure to the rollers. It is necessary to have something to keep it up here. A yielding pressure upon the boards is required. In one machine the board is controlled in its breadth in the same manner as in the other machine; and the board is forced and retained in its position by the same means in this machine, as it is in that one; it is substantially the same way, the cylinder being taken off of the Woodworth machine. Here in cutting the tongue there is a precise difference; here it is by a horizontal and there by a vertical axis; they are all rotating cutters. The precise difference is in using two circular saws for cutting a horizontal axis, and two on the sides upon a vertical axis. In the machine, if I mistake not, that I have seen, it has three saws which make up the thickness, instead of one, and this is no difference in principle; there is only a technical difference between the saw and the cutter wheel, and circular saws are cutter wheels in principle; between this machine and that of Mr. Barnum's, I see no substantial difference in principle. The toggle joints take hold of each side of the board, and as far as the feeding operation is concerned, they supply the place of the feed roller. These pressure guides seem to serve a double purpose; they serve as guides upon the edge of the board, and as a pressure to keep the board from rising up to the cut of the knife. If the board is warpèd by this deflection the pressure comes upon it, and while it is under the finishing cut of the knives, it must nearly be made in the arbor. The cut commences there where it leaves off; the same in both machines. The inside knives will not cut if they are straight, except upon the ends, unless by deflecting the board, the tendency of that cut is to draw it towards the knife. The roller does not prevent it going in that direction, but these side guides do. The knife must be at right angles and parallel with the length of the board. It is at right angles to the edge of the board in the Woodworth machine, and the finishing cut is parallel; in these two things they are essentially the same; but there is an essential difference. Now this machine does not draw so hard as the other one in that direction. The shaving is not of uniform thickness; it begins infinitely small and thin, and grows thicker; it is a wedge shape; the finishing cut is a lift cut, and is made under the axis; the shaving is not, to the same extent, a wedge shape in the one machine as in the other; but if the other machine was a very large cylinder, to present a curve similar to that presented by the deflection in this board, then it would cut a chip, as far as the wedge is concerned, perhaps precisely the same. The difference between these cuts depends upon the velocity, all other things being equal; if it were one-sixteenth of an inch between one and the other cut, then the cuts would be one-sixteenth of an inch long. The distance is almost inappreciable, the velocity being so great. The two modes are the same, as far as the planing of the board is concerned, in principle and mode of operation.

The board is fed there by the action of the machine which is self-feeding. In that machine it is fed by the toggle joint nippers or strut nippers, a well known device carried forward and back alternately, and that I consider tantamount to the feeding rollers. The board is forced to a correct position by a combination of a bed piece or friction or pressure rollers upon the back side and pressure guides upon the front shoulders of the groove and tongue. That pressure is produced in this manner, the bed piece or pressure roller being only one, while this pressure is produced by these front guides in this position or direction. These guides upon which the board passes are bent; either the knife or the board must deflect; and here you have to make use of the spring of the board to bring it to a bearing. It is apparent that, if the convex curve were placed upon that straight edge, that it would straighten it; it would correct the board in that direction; it is not so apparent that when that side is up you produce the same result; but it is just as true the same thing is done in the other machine by means of these weights and levers. It is a dip and lift cut in both machines, and they cut from the finished to the unfinished surface. After a board was planed you could not tell if it came from one machine or the other. There is no difference between an immense cylinder producing that curve, or a plane sweeping over a groove having a curve of the same radius; the machines are the same, except in the form and number of the tools. In this machine some of the tools can be taken out and sharpened, which is an advantage over the Woodworth machine; but when the tools are put in their place again, it is the same as though they were fastened there eternally, and this is only a question as to the convenience. This model of the Barnum machine will not work as it is. This one is the model of a machine which represents pressure rollers in lieu of guide strips. I think a machine of this kind, with proper contrivances to guide the plank, would do for a working machine. These pressure rollers would be substantially the same as the guide strips in the Barnum machine. If we had toggle joint nippers, it would be the same as a dip and lift cut.

Examined by Mr. Campbell.

It is in effect a dip and lift cut; the difference between the two machines is, that in Woodworth's the knife is bent; and in the other the board is curved; or the track of the knife in one case is curved, and the track of the board in the other; the knife is not bent but the track of the knife is curved in one, and the track of the board in the other.

Cross examined.

I never saw a Woodworth machine in operation with the board held down as described there with gauges, but I should think they would hold it while undergoing the action of the cylinder, without drawing up or tearing the board. Feed rollers are described here; a feed roller is not a pressure roller in the meaning of this case and of my language, but as an abstract fact feed rollers are compressing rollers; therefore compressing rollers are described upon that machine. I never saw a Woodworth machine with a device to bend the board down, and there is no use of it when you use the cylinder. I have never seen a machine in operation with these minute rollers along the top of that tongue and in the groove. I never saw a face plate wheel with rollers on the top to hold it up, and I never saw a machine driven like that in use. I think rollers could be contrived that way to work, and they would be equivalent to gauges; then you must, in order to make the rollers work, have them so close together as to form in effect a gauge. The ordinary thickness of a board is an inch; then you take one-third for the tongue; there may be pivots at each, and you may have a stud. I think a pivot could be got strong enough though I never saw it done. The whole diameter of the roller would not be one-third of an inch. The extent of the deflection of the board is a matter of option of the operator.

Mr. Stoughton. If in 34 inches there is a deflection of $\frac{1}{12}$ of an inch, there would be some 30 feet of circumference before you would get one inch in view of your diameter?

Mr. Waters. You are getting extravagant; where are your 34 inches? It is quite likely to get a cylinder so large as to be unmanageable. I have taken an illustration which, if taken in regard to that machine, would be impracticable and useless.

Mr. Stoughton reads a portion of the specification and asks, there is the only description of a planing cylinder in Woodworth's specification that I have read.

Mr. Waters. But he describes other tools that are analogous; he describes different modifications of the same one.

Mr. Stoughton. Does he describe any other means of making that planing cylinder to plane the face of the board?

Mr. Waters. I see no other.

Mr. Stoughton. Would that wheel put in there work well?

Mr. Waters. It would not do the thing, because it could not make the dip and lift cut in that axis. The strokes would be varied. They would not be parallel, and would score the face of the board with marks, leaving it not smooth. The rollers that are put in there would not cause the board to be well planed; it would not deflect; that disc would cut the end of the board badly. I told you Woodworth did not describe that disc wheel, and how could he describe the means of using it?

Mr. Stoughton. If these rollers will not perform that office successfully, nor the operation of the disc when it is put in there, how can the device contrived by Mr. Barnum be an equivalent?

Mr. Waters. For the best reason in the world; that by the combination of substantial parts they are better to be guides than to be rollers.

Mr. Stoughton. Is there any such method described by Mr. Woodworth for holding it down?

Mr. Waters. Yes, sir; here Mr. Waters read from the specification.

Mr. Stoughton. Is that what you call a description of that device?

Mr. Waters. Yes, sir.

Mr. Staughton. Is it not a claim merely of Mr. Woodworth's that you have read?

Mr. Waters. Yes, sir. And this is a very important matter, by an analogous device, I mean a device that will do the same thing. A disc placed there between rollers, the board being on an absolute plane, and not on an angle or curve, will not work well; these rollers will not answer to curve the board, and gauges will not unless they come up here. I suppose I have seen the Barnum machine; I went to see it once, and I looked at it about fifteen minutes, and besides that fifteen minutes, and what I have seen here, I have never seen it. I think a similar cutter was in his machine to cut the groove and shoulders.

Re-examined by Mr. Latrobe.

Mr. Waters. These rollers have a double purpose; they feed and connect the plank both. Taking the four rollers as pressure rollers, and the four guide pieces and the roller in the other, they produce the same result.

Mr. Latrobe. Is a cone cutter described in the Woodworth specification?

Mr. Waters. No. sir.

Mr. Latrobe. Is the device employed by Mr. Barnum an analogous or different device from that employed by Mr. Woodworth?

Mr. Waters. " It seems very clear to me that it is analogous; it is for the purpose of planing, tongueing, and grooving boards at one operation. They are substantially the same. There is a trifling precise difference. They use three here instead of one to get the thickness, and what difference does it make whether they have three or one? The question of arrangement involves no invention."

Re-examined by Mr. Campbell.

Mr. Waters. " The mere change of form of the tool is at the option of whoever uses the machine, since the principle is the same. The tendency of the knife in Mr. Barnum's machine is to tear off the edge of the board; but there is a provision made for that in the machine—a piece of hard wood being put there to prevent the knife doing so."

Cross examined by Mr. Stoughton. I think I heard you say that in this specification Mr. Woodworth describes cutter mouldings?

Mr. Waters. " I will tell you what he does describe. Perhaps I did say so. Here is one thing I wanted to read about these cutters, that I could not find before.

Mr. S. “ I want to know about the mouldings.”

Mr. W. “ I cannot find it here, now.”

Mr. S. “ I think I heard you say that the method of moving the plank was an old and well-known device?”

Mr. W. “ I referred to the drawing of the wire: he has doubled it, and put two for one.”

Mr L. “ Did you ever see any thing like that applied to moving a board, or any thing before?”

Mr. W. “ No, sir; and if the Woodworth machine had been a fire machine, you would never have seen that.”

Edmund M. Morse being duly sworn, testified as follows:

Examined by Mr. Latrobe.

Mr. Morse. My occupation is that of block making, connected with machinery. I have been a practical machinist, connected with block making, some 22 or 23 years, and am still in the same business. I have known the Woodworth machine since its introduction in 1828, and am partially acquainted with the Barnum machine, from what I have seen of it here. I have read the amended specification of the Woodworth machine of 1845. The object, as I understand it, of the Woodworth machine, is to reduce by a rotating cutting cylinder, or cutting knives connected with the cylinder, with cutting wheels for forming a groove and tongue, in connection with pressure rollers, to keep the plank in a proper position for the action of the knives—the whole machine being intended to reduce the plank or board to an equal width and thickness at one and the same operation. The plank is advanced to the knives or cylinder by means of the pressure roller, as exhibited in the model. The plank having reached the knives, the operation of the cylinder upon the board is to produce a dip and lift cut from the finished to the unfinished surface of the plank—the knives or cylinder moving in a contrary direction to the motion of the plank. The motion of the knife is in the same direction with the grain of the board; but the line of the knife is across the grain. As the knife strikes the board, it is at right angles with the edges of the board. After passing the cutting knives or cylinder, the board comes in contact with the tongueing and grooving cutters; and in passing through the machine, these cutters perform the operation of tongueing and grooving.

Mr. Latrobe. “ You tell the jury that after the board has passed under the planes it meets the tongueing and grooving cutter wheels, by which it is tongued and grooved; and having been thus planed, and tongued and grooved, it passes through, and leaves the machine a board fit for household carpent[ry] and other use?”

Witness. “ Yes, sir; Mr. Barnum's machine forwards the plank to the planing tools by means of these toggle-joints. I look upon those toggle-joint nippers as mechanical equivalents for the pressure rollers, as regards the forwarding of the plank through the machine.”

Mr. Latrobe. "You have spoken of those pressure rollers as the means adopted by Woodworth for keeping the plank steady under the action of the knife. What is the mode adopted by Mr. Barnum?"

Witness. "I consider it a similar substitution in the shape of pressure gauges, as I suppose they may be called similar in its action. From the examination I have made, I should say these gauges were curved edges. I perceive, sir, in the machine to support the plank where the curve changes, what I would denominate a back friction roller coming directly behind, or nearly directly behind, the line of action of the knife where the angle of the pressure gauge changes. The plank is to be prepared by what is denominated a tongue and groove, before it can pass through the machine for finishing the face. I should think the action, or effect of the action, of the knife in Barnum's machine was similar to that of the Woodworth machine, inasmuch as it consists, to a certain extent, in a dip and lift cut. The plank passes through the Barnum machine in a direction counter to the motion of the knives, as in the Woodworth machine, or in a contrary direction. The direction of the finishing cut of the knife in the Barnum machine is with the grain of the board When the knife which finishes the board strikes it, it is at right angles to the edge of the board. After the knife has given its finishing stroke, it approaches the surface of the board; it is a lift stroke, otherwise it could not approach the surface of the board."

Mr. Latrobe. "What is the reason that the knife approaches the surface of the board, revolving as it does in a plane?—what is that owing to?"

Witness. "By the action of the knife or cylinder, or cutting wheel, as it is called."

Mr. Latrobe. "What is the object of bending the plank, sir, in that machine?"

Witness. "I should understand or explain the object as being, if the plank was not grooved after leaving the right-angled action of the knife, there would be what is denominated by mechanics a back lash. It would strike the face of the board, and produce a bad operation. I should think the method of planing the plank in the two machines was the same in principle and operation. They produce the same result."

Judge. "Is the producing the same result the reason of your alleging them to be the same in principle and mode of operation?"

Witness. "Yes, sir."

Mr. Latrobe. "Is there any thing different in principle and mode of operation in the action of the knife in the Woodworth machine to finish the surface of the board and the action of the knife in the Barnum machine?—(I am now speaking of the action of the knives in the two machines, not of the result)—is there any thing different in principle and mode of operation in these two knives?"

Witness. "I should say not."

Cross examined by Mr. Stoughton.

Mr. Morse. "I reside in Boston, and was requested to come here."

Mr. S. "John Harvey, a witness whose deposition has been read, has stated that things having a change of form and not of effect are mechanical equivalents: Do you agree with him?"

Mode of putting the question objected to by Mr. Latrobe.

Judge. "There are a great many phrases as to whether they are similar, the same, or mechanical equivalents. He said at one time, 'I think the two machines are the same in principle and mode of operation; they produced the same result.' He afterwards said that there was no difference in principle and mode of operation in the action of the two knives in the two machines. He is examined here as an expert, and they have a right to ask him that question. It is no matter whether he uses the term similar or mechanical equivalents."

Mr. Campbell. "I have no objection to their asking the witness what he understands by a mechanical equivalent."

Mr. S. "Things having a change of form and not of effect are mechanical equivalents;" is that your understanding of what is a mechanical equivalent?

Witness. "I will endeavor to explain myself as well as I am able. I consider the feeding of the board to the cutters of the Woodworth machine, and the feeding of the board to the cutters of the Barnum machine—I consider these two operations a mechanical equivalent, the one for the other; they effect the same purpose, as I understand it."

Judge. "He is giving an answer in the affirmative; his answer is an affirmative answer in the concrete."

Mr. S. "I think in your statement you said the pressure roller to be found here was an equivalent to the feeding apparatus in that machine, and the feeding roller was equivalent to the gauges; was I right? Did you say that the roller which holds the board down in this machine was a mechanical equivalent for the gauges to hold the board down in that machine?"

Witness. "I do not know that I said they were mechanical equivalents; I said they were similar."

Mr. S. "Now take the rollers from the Woodworth machine, and take the gauges from the Barnum machine; and put the rollers to the Barnum machine, and could they operate without the gauges?"

Witness. "They might with the necessary apparatus, but without any other fixtures I should think not. I should think the action of the adze, when it entered and passed out of a board, before it leaves the end of it, is a dip and lift cut, and the action of the smoothing plane is partially a dip and lift cut; but I should think they were not mechanical equivalents, nor substantially the same mechanical tools."

Mr. S. You see that cylinder and that bed-plate: it is upon an absolute planing bed, the disk revolving at right angles in its axis, and describing a plane there; and with that, and that roller, will the plane work well?"

Witness. "I should think not."

Mr. S. "Does the Woodworth cylinder work well?"

Witness. "Yes, sir."

Mr. S. "Then would that disk placed there be a mechanical equivalent for the cylinder placed there?"

Witness. "I should think not."

Re-examined by Mr. Latrobe.

Mr. Latrobe. "Suppose the disk wheel is put upon that machine, and the board is so bent under the disk wheel, that after the knife has entered the board, it is made to leave it: is then the operation of planing with the disk wheel on that machine a mechanical equivalent for the mode of planing by the cylinder on that machine?"

Witness. "I should think it would be."

Cross examined by Mr. Stoughton.

Mr. S. "Will the rollers bend the board as you see them in that machine?"

Witness. "Not as it is now constructed; I do not see any means of bending the board there."

Re-examined by Mr. Latrobe.

Mr. Latrobe. "In order to use the disk wheel on that machine, would you not bend the board to produce the cut?"

Witness. "I should bend the board; I do not think the disk wheel could be used with any effect on a perfect horizontal plane; I do not think it could amount to anything as at present constructed."

Alexander Porter Brown being duly sworn, testified as follows:

"I have acquired my knowledge of machinery by preparing specifications to obtain patents; I was with Keller and Greenough, in Washington, and since then with Keller, of New York. I have been five years in the business; I am acquainted with the Woodworth machine; I read the specification of 1845 three years ago, and within the last few years I have seen a model of the machine several times. I never saw a Barnum machine till I saw the model here this morning, but I have examined it for a few minutes. The principle of the Woodworth machine is the combining of pressure rollers with rotating cutting edges. That definition wants a great deal of explanation; that is the principle of the machine. I consider that the essence is the producing the lifting or drawing up cut from the board; that is produced in the Woodworth machine by the board being held down by the pressure rollers, and is perfectly flat, and the knives have the lift or draw up motion; the essence is its producing the draw up cut, not having anything to do [with] whether the board is flat or not. Wherever you find a board held in such a way that a draw cut can be produced, whether by rotating knives or otherwise, you find the principle of the Woodworth machine. The combination of the lifting cut, no matter how produced, with the means of holding the board to, is the essence of the Woodworth machine. The lifting cut, which I consider the essence of the Woodworth invention, may be produced in a variety of ways, or by two classes of ways. Either a board may be held down flat, and the lifting cut produced by a rotary motion of the cutting edges, or the cutting edges may be straight, and revolve in the same plane, generating a

2522.

disk, and the board fed to the action of the knives in such a form as the same kind of a cut shall be produced. These I consider the two classes of ways in which the essence of Mr. Woodworth's machine may be embodied. The Woodworth machine exhibits the first of these ways; the board is held down flat and the cutting edges rotate. The Barnum machine exhibits the second of these, that is, the knives that is, the cutting edges are straight, and in their rotation describe a disk. The board being fed to the action of the cutting edges in such manner as to produce the same kind of cut, fed in a curved or bent form. What I consider to be the essence of the Woodworth machine is unquestionably found in these two machines. In the Woodworth machine the plank is fed, carried, and steadied under the knife, by pressure or other analogous device; and in the Barnum machine it is done by guides or ways, which is unquestionably a device analogous to the pressure rollers."

Mr. Latrobe. "Do you see two knuckles or joints on the Barnum machine, and what is their purpose?"

Witness. "They appear to answer the same purpose as the pressure rollers in that machine. These toggle joints are like the pressure rollers, in so far as they hold down the board. I have really not examined that part of the machine." (Examines it.) "They feed it forward also; these guides or ways keep the board down at the moment the knife strikes it, and the pressure rollers do it in the Woodworth machine; and in respect to holding the plank down, while it receives the finishing stroke, the pressure rollers and the guides or ways are analogous devices. I should call two mechanical devices mechanical equivalents, without any regard to their construction, provided they produced the same result in degree, and operated in substantially a similar manner to produce that result.

Judge. "In giving a part of your definition 'substantially similar,' we get as far off as 'mechanical equivalents;' the difficulty is to reduce the definition to something that could be applied."

Mr. Latrobe. "Take these two machines, as they stand before you, and explain to the court what are mechanical equivalents."

Witness. "The rollers in the Woodworth machine hold down the board flat down on the bed for the action of the knives. The knives rotating in the Barnum machine, the guides or ways hold the board bent to the action of the knives. I consider the action of the guides in the Barnum machine, used with the motion of the knives in the same plane, to be the analogous device of the pressure rollers in the Woodworth machine."

Cross examined by Mr. Stoughton.

Witness. "I reside in New York; I am connected in business with Mr. Keller, who is now the counsel for Mr. Wilson in this patent."

Re-examined by Mr. Latrobe.

Mr. Latrobe. "Are you a counsellor at law?"

Witness. "No, sir; I wish I was."

Mr. L. "Do you know Jacob P. Wilson?"

Witness. "I do not; and I do not know that there are any professional relations between Jacob P. Wilson and Mr. Keller?"

Examined by juror.

Examined by Mr. Riely, one of the jurors. "You have spoken of the rotating knives. How do they rotate?"

Witness. "They rotate, generating a disk. The knives in the Woodworth machine rotate around the axis of the stock in which they are fixed."

Mr. R. "You speak of the rotating of the knives. How do they rotate? What is their manner of rotating upon the board?"

Witness. "They do not rotate upon the board. I do not understand your object."

Mr. R. "Do they rotate from rear to front, or from front to rear?"

Witness. "They rotate in a direction the reverse of the direction of the board."

Mr. R. "You say they are held down there by pressure rollers, or some analogous device. What is the analogous device?"

Witness. "It may be weighted levers, springs, or guides. In degree weighted levers would propel the board forward; they would perform part of the function; they prevent the board from rising up. If they were hard enough to hold the board perfectly tight, they would not answer the purpose for which they are put in."

Mr. R. "Take away the rotating rollers there, and what device do you use to perform precisely the same or competent purpose to that?"

Witness. "I do not know that I can call to mind, without I had more mechanical invention than the inventor of that machine, a better device."

Mr. R. "I ask you by what devices?"

Witness. I have given them; guides, weighted levers. If we use guides, they hold the board down flat at its edges, but it will draw up in the centre."

Mr. R. "My object is this: He says this work is carried on by pressure rollers. I want to know when he takes away these, what analogous device he would place on that machine to make it do the work of the pressure and feeding rollers?"

Witness. "I want to understand the question, as it seems to be important, but I cannot see it."

Mr. R. "You spoke of the board, that it was held down by that or by analogous means; and I want to know by what analogous means you would hold it down, straighten it if crooked, and propel it forward?"

Witness. "You wish me to suppose that I have no pressure rollers; and then tell you how I would do what they do. I could hold the board down by guides, and they would straighten it if crooked. If they were rigged in that machine, they would hold the board down at the edges. That form of guides would not answer in that machine. You may hold the board down by the friction of rollers applied to the edges of the plank. These will hold the board, and feed it along in degree. In my definition of analogous device, I said they might be different in construction, and produce the same in degree. Now, the rollers applied in that way, or guides, will not produce all the effects; and the drawing up in the centre is one they will not perform. The rollers here fixed, were constructed and formed to hold the board at the edges; and it could be driven by bands or by cog wheels. May it please the court, I do [not] think I can make myself better understood.

Re-examined by Mr. Latrobe.

Mr. Latrobe. "Take off these pressure rollers from the machine. On this end of the machine put a guide strip with a straight edge over it, and under that weighted straight edge, and in contact with the guide strip, place the plank between the tongueing and grooving wheels, and hang two guides or ways, such as are in that machine, on this side of the planing machine, to catch the plank after it has passed through the knife, would the plank be held steady in that way; what would be the effect of the two strips I have described?"

Witness. "They would hold the board down, and they would perform the same office as is produced in the other machine.

Re-examined by Mr. Campbell.

Mr. Campbell. "These rollers are feeding and pressure rollers, and by putting the guides there they perform the one, and you would have to feed by something else?"

Witness. "Yes, sir; by guides, I refer to guides that will hold the edge of the board, and the form is not a matter of consequence. If the board is crooked they would tend to straighten it."

Cross examined by Mr. Stoughton.

Mr. Stoughton. "I think you said, a few minutes ago, that friction rollers at the edges would not hold it down in the centre. Is that so?"

Witness. Yes, sir; and the action of that cylinder would also tend to draw it up in the centre?"

Mr. S. "Then could you make a good machine without the roller?"

Witness. "Yes, sir."

Mr. S. "Using the gauges alone, nothing else to hold the board down, and will it plane well, or will the board be drawn up?"

Witness. "It will in a measure."

Charles M. Keller, sworn.

My education was originally that of a mechanical engineer; I became acquainted with the Patent office, and became examiner of patents in 1836; and as the duties were somewhat judicial, I studied law, and am now a counsellor at law, in connection with patents. I was examiner of patents about nine years, from 1836 to 1845. I had charge of the model department from '29 to '36, and am now practising law limited to patent cases. I commenced as a practical mechanic at the bench first. I have read the specification of the Woodworth patent of 1845, and have endeavored to make myself thoroughly acquainted with the patent. I have been called upon frequently by Mr. Wilson and others, to bear testimony as to the infringement of the patent. I am not engaged with Mr. Wilson as counsel, nor would I be in any case in which I could be called upon as a witness. I was employed a short time since by James G. Wilson about a case in Boston, not connected with rotating cylinders, nor the present case of infringement. When application was made for the extension of this patent, the matter was referred to me by the commissioner to give my opinion on the question of originality, and its merits. I made such a report as I was competent at that time; the report was oral. The essential principle of that machine is in the mode of controlling the plank in connection with the planing irons and other instruments for cutting and reducing the surface and the edges. The object of his invention is to plane, tongue, and groove plank, and reduce them to an equal thickness. To effect this object, a pressure is made upon the surface of the plank; that as it moves along to be operated upon by the cutters, its under curface shall always be at the same distance from the under point of action of the cutting instruments, and in this way to cut off all the surplus material, over and above the required thickness, whatever may be the varying thickness of the plank, or the bends and warps along its length. The object of this pressure upon the plank to control it is also to resist the action of the planes, which have a tendency to lift up the plank from its bed, and also to vibrate it. By this mode of controlling the plank, not only is the surface planed down to an even thickness, but the tongue and groove on the edges are made parallel to both surfaces of the plank; that is the principle and object of the invention. The mode in which that principle is applied, as described in the specification, is by means of what are termed pressure rollers, placed one in front and the other at the back of the planing cylinder, which rollers are yielding, to adapt themselves to any varying thickness in the plank as it moves along; the surface of the plank is planed by cutting irons, which extend entirely across the surface of [the] board, and so arranged about an axis of rotation as to generate a cylinder in their motion, that they may in passing around gradually approach the planed surface, and cutting upwards therefrom, make a short cut nearly in the direction of the grain of the wood. The tongue and groove upon the edges are formed by what are called duck bill cutters, which are attached to heads or to shafts at right angles to the axis of the planing cylinder, the form of these cutters being such as to determine the form of the tongue and groove to be made, and of course varying according to the form required. I have seen Mr. Barnum's machine, some time since, at his establishment; but I first became acquainted with a machine similar, and I think it was his, in the

2524.

city of New York, some few years since; Mr. Barnum was there at the time; but it was not exhibited as his machine. It involved the essential principle of his machine. The Barnum machine, so far as regards the planing part, which is the only part represented here, is essentially ths same as the Woodworth machine; but the mode of applying that principle is different. The identity of principle is in making pressure on the plank to control it during the planing operation, and giving the cut for finishing the surface of the plank, nearly in a line with the grain of the wood, and at the time the cutting edge is passing a line, radiating from the axis across the surface of the board, in other words, when the cutting edge is passing at the point nearest the surface of the plank, the unfinished surface. The mode in which that principle is carried into action is, instead of pressure rollers, there are gauges which fit on the one side into the groove in the plank, and on the other upon the tongue; and as the plank passes under this it is forcibly held down upon the bed, compelling it to resist the action of the plane, and to prevent the vibration of the plank, and also to keep its under surface always at the same distance from the line of action of the cutting irons, or planes. And to effect the finishing cut of the plane in a line nearly parallel with the grain of the wood, and to make them gradually approach and recede from the surface of the plank, the plank itself is bent, that its surface may represent a curved line, or curved plane, that it may be nearest the plane of motion of the cutting irons, at that part of the motion which is intersected by a radial line passing from the axis of the planing cylinder across the board at right angles with the edges of the board; the planing irons, therefore, in their motion move in what we may call a flat plane, instead of a curved plane [as in] Woodworth's. And the plank is bent to approach and recede from that plane of motion, instead of being straight as in Woodworth's. The griping jaws in the Barnum machine are equivalent to the feeding rollers in the Woodworth, so far as the latter are feeding rollers; they may be called toggle joint nippers; they effect the office of the feeding rollers. The two plates which I have described, one bearing upon the tongue on one side, and in the curve on the other, perform their office in so far as they are pressure rollers. The cut in the Barnum machine is combined with the lift, as in Woodworth's. If you suppose the surface of my hand to represent a curved plank, and this the line of motion of the instrument, it first cuts in, and then from the surface, and in cutting from it tends to lift that up, the same as if it by moving in a curve rises from the flat surface. The action must be the same, whether you bend the board, and have the motion of the instrument straight, or curve the motion of the instrument, and have the board straight; in the one case, the cutting motion is a tangent to the plane of the board; and in the other, the plane of the board is a tangent to the cutting instrument; so far as regards the essence of the Woodworth invention, I find it in the Barnum machine. In that machine the board is controlled while undergoing the tongueing and grooving by pressure rollers, the same as in the planing machine; there are two rollers which pass over the surface and com-press the under surface; the inequalities in the plank may be all above. The cutting instrument for tongueing in Barnum's machine consists of three saws; there are two sets of cutters which finish the edge of the board, and between these two cutters are three saws placed together to make up the thickness required for the breadth of the groove, and these cut into the edge of the plank to form a groove, their thickness being equal to the form and width of the groove. In consequence of my business I have examined such a mass of machinery that I would not pretend to say whether, at the time I saw Mr. Barnum's machine, he used the three saws or something else; my impression is, that the groove was formed by a single instrument like that. These saws have longer teeth than are generally used by saws of that size. The aggregate thickness determines the breadth of the groove; the tongue on the other edge of the plank is formed by four saws, two of them upon one shaft, with a space between corresponding with the thickness of the intended tongue, and they cut in leaving the thickness of the plank between them equal to the intended thickness of the tongue. The other two saws are upon separate shafts, the one above the plank to cut down this shoulder, and the other below to form the other shoulder; so far as regards the employment of rotating instruments to form the tongue and groove, in combination with the pressure rollers, I consider the Barnum machine as involving the essence of the Woodworth invention. The means employed for forming the groove, and for finishing the edge of the plank, are substantially similar to those described in the Woodworth patent; but the means employed for forming the tongue are different, there being 4 saws instead of two sets of bill cutters. There is that difference, that three saws are used to that. In connection with the cutters for finishing the edge of the plank, are substitutions of the cutter in the model; so far as they act, they operate in the same way, and are essentially the same instruments. I find in the Barnum machine essentially the same combination as in the Woodworth machine. These cutting instruments are to be attached to an axis, and rotating generate a short cylinder; as they rotate, this cutter, and that one, cut upon the edge of the plank and reduced it to an equal breadth. In Mr. Barnum's machine the three saws are that cutter, and on the washers, which fasten them to the shaft, there are cutters like this, and that which reduce the edge of the plank to an equal breadth. The breadth of the plank is between the shoulders of the tongue and the outside of the groove. The instrument for holding the tongue, cutting along this edge, *and* reduces it to a staight line; and there is a middle cutter that squares off the edge of the tongue; they cut this edge of a board in a straight line on this side, and two cutters cut this edge parallel to that one; and a middle cutter goes in that groove, so that both edges are made parallel, and it comes out of an equal breadth. I find that, in both of these machines, except that for making this tongue, instead of having two cutters Mr. Barnum has a saw that cuts in here to form this, and one for this, and a third to form this shoulder, and a fourth to form that on the other side; the difference is, he uses three saws instead of one cutter to make the thickness.

Judge. Do you consider these three saws as a different combination of machinery to effect the same purpose, or a different combination of the same means as used by the plaintiff?

Witness. I consider them essentially the same means, involving the same combination—that of the cutting instruments for forming the tongue and groove, and pressure rollers for controlling the plank, and without the pressure rollers it would not act. An imperfect equivalent for the pressure rollers in Woodworth's would be a straight bar extending across the plank, and pressing down on the surface; but the roller is better, for it reduces the friction that would be made by such a pressure; but so far as regards the pressing down of the plank, it would be equivalent. I would feed it with feeding rollers or an endless chain, or rack and pinion. It is seldom that pressure rollers are used for the purpose of feeding; one plank would feed the other. The plank being held down here by the pressure rollers would resist the action of the knives. These gauges will hold down the edges of the plank, and bend the middle of the board; the act of bending makes a series of arches, which take out all the warps; they are only the imperfect equivalent of the pressure rollers, for they make the pressure on the edges instead of entirely across. The board in the middle is bent by passing over a bed plate. The bed is moveable below, and it rises so that the plank is bent from it, and, in doing so, it flattens out all the transverse curves. A board may be passed through the Woodworth machine, and planed without pressure rollers, and without being tongued and grooved, and it may be passed through, having been tongued and grooved. The novel idea is the use of pressure, and the object is to plane, tongue, and groove planks. The machine is now adapted to planing a plank which has been tongued and grooved by using gauges, and bending the plank; it is adapted to straightening out the plank in all directions by bending it, that any traverse bends may be straightened out; the bend is given by a follower beneath the plank, which being forced up, the plank is bent over it; it is bent down before and behind this and forms a hog-back; this is exactly as in the Bărnum machine; the machine now exhibits the use of guides; all the uneven thickness is upon the upper surface. As it now is, the planing is effected by the fall plate; the plank is pressed down by means of gauges, and the tongue and groove; it is bent by a piece below, and fed by feed rollers. This is the Barnum machine fed by friction rollers instead of toggle joint nippers. The object of bending it is that the planing irons that finish the surface may act upon the board when it passes along this line, and to straighten out the plank if there be any lateral warps; it is only the finishing cut that is a dip and lift cut. I do not know of any cutting instrument for giving a smooth cut that does not give a dip and lift cut, except the broad axe and the curved knives of Mr. Barnum. If the motion was very slow, so that there was but one cut in every inch of the plank, it would be practically a dip and lift cut; and if you advance the plank so as to change its position, the plank moves between each successive cut before the tool again strikes it. If we use the disc wheel where the board is not bent, the cuts upon the surface are all like this: it commences here, and comes round in a cycle; but by bending the plank, the last cut first cuts across that part which is elevated just at the bend of the board, and for practical purposes it is in the direction of the grain of the wood. If the board is not bent in the vibration, the machine will make a back lash and score the board, and we bend it out of the way. If a plank is put into the Barnum machine bent, and one stroke is made of the knife, and then taken out, and let fly straight, there would be an inward curve into the surface of the plank like an adze cut. If it were straight, it would make a dip and lift cut, and the board would be scored. Here, instead of having the gauge plates, there is a series of small friction rollers, one side passing in the groove and the other pressing on the tongue and holding down the board. These are essentially the same as the gauges, and can be made to roll or not at pleasure. They will reduce the friction, and in both cases they make the pressure. I think they can bend the board if they are near enough together; that is, the direction of one stroke of the Woodworth machine, and a stroke of the Barnum machine, with the board bent, would be like it, but not so abrupt; but this would depend on the abruptness given to the curve. It would be the same in character. The first modification of the machine exhibited the planing of a plank that had not been tongued and grooved previously, where guide strips were used instead of pressure rollers with the Woodworth cylinder. The second was the Woodworth cylinder, where no pressure rollers were used, but guide strips, operating in the groove and on the tongue, and the bending of the plank. The next was the Barnum cutting disk, with rollers guiding as the guides do. The last was Barnum's disk, where small rollers were used to guide the plank instead of guide strips.

There are two classes of mechanical equivalents; known mechanical equivalents are the substitution of mechanical devices, which perform the same function, separately and independently of the combination in which they are used; it is the substitution of a device which has been used in other machines to perform that function. If, in a given machine, a reciprocating motion is to be produced from a rotary motion, and the patentee, in his new combination, describes that as being effected by means of a crank; every one acquainted with the principles of mechanics will know that an eccentric may be submitted for that crank without invention: both being known mechanical equivalents for producing a reciprocating motion from a rotary motion. One of the strongest to my recollection is the invention of James Watt, the condensing steam engine. It consisted in condensing the steam separate, but connected with the cylinder of the engine, instead of effecting the condensation in the cylinder itself, by the introduction of a jet of water; that had been done before; his object was to prevent the cooling down of the cylinder of the engine at each stroke, by the introduction of a jet, which made a great waste of steam. When the connection, as it was described in his patent, was formed between the cylinder of the engine and the con-

2526.

denser, a jet of water was introduced into the condenser, which cooled it down, and the steam might rush from the cylinder to the condenser, and was condensed. The equivalent for that was the known still-worm, by which the vapor from the still head was passed to be condensed—the worm being surrounded by water to keep it cool; his patent was to condense the steam in a vessel separate from the cylinder. The substitution of cog wheels for belt wheels is a known mechanical equivalent, for the same motion can be given by the one as by the other; in many cases a wedge is the equivalent for screw or lever, where their office is simply to raise a body. The invention consists in combining the function of the one with some other mechanical device. The other class are the unknown mechanical equivalents, generally called improvements. The first class do not require exercise of inventive faculties; but the other class involves invention; they are improvements. If an invention consists in the combination of given mechanical devices to produce a combined result; if any one of the devices used in that combined result be dispensed with, and a new device invented to perform that self same function, it is the invention of an improvement upon the original combination, and is distinguished from the known equivalents, for it performs the object in a different way, and is considered in the light of an improvement in the original combination. The machine, as improved, involves the same principle that it did before the improvement, being merely an emanation of the original invention. There is an illustration in the spinning machine; it is a spindle, with a bent bow coming down on each side to guide the thread; the central spindle gives the rotation; the bow which descends, guides the thread and occasions the twist, and the rapid motion of spinning gives a vibratory motion to this bow; it was improved by carrying the bow down and steadying it; so far as it acted as a guide, it was an equivalent for the other, but it added the new idea of steadying the guide; it is an improvement; analogous device is another means of conveying the same idea as mechanical equivalent. The idea of bending the board in connexion with the pressure made upon it for [the] purpose of removing the transverse bends, I should consider as partaking of the second class of equivalents. The double purpose of bending the board out of the way of the knives and to hold it down, I should class under the second class. The use of the gauges, instead of the rollers, is substitution of mechanical equivalents of the first class; but when that is connected with the bend of the board to straighten it, then it partakes of the second class. The substitution of the disc for planing cylinder in combination with gauges to make the pressure on the board, I hold to be the mere substitution of mechanical equivalents; but the machine would not answer the purpose, if you merely substitute one for the other, for you have the back lash on the board; then you introduce another idea of making the cutting edge gradually approach the surface and recede from it; this brings it under the second class; the idea of holding down the board to reduce it to an equal thickness is embodied in the two machines, but the improvement is, the idea of bending the plank in connexion with the pressure on the edges. I look upon the whole essence of the original invention of Woodworth as being embodied in the Barnum machine; the board is pressed down to its bed to reduce it to an equal thickness, and the planes gradually approach and leave the surface of the board. That I take to be the essence of the Woodworth machine, and it is found in Barnum's. The essence of the one is in the other with the improvement of bending the board. The very spirit of the Woodworth invention has been put in Barnum's."

Judge. "The Woodworth machine is a combination of mechanical devices to produce a certain result. I want to know how far Barnum's is a combination of the same, or whether the Bramah disk is not a different combination; it is not the producing the same effect, but producing the same effect by the same combination."

Witness. "The planing machine produces the same effect; but the invention of Woodworth is distinguished by combining with the planing instrument the means of controlling the plank; any mode of controlling that plank must partake of the principle of Woodworth's combination; every principle is susceptible of a variety of changes of form in which a mechanic can see the old principle; here I perceive the holding the board down, though the plane may act upon it independently, yet the principle is the same, if planed by an instrument in the form of a cone or disk. This I do not consider a change of principle; a thing may be a mechanical equivalent though it is inferior, so far as it produces the same effect; the toggle joint, nippers, and the pressure rollers, are known equivalents to feed the board forward."

Judge. "It is not, if they are equally good, but if *they* are other known means of doing the same thing?"

Witness. "Yes, sir; one mechanical equivalent may be inferior or superior to another. The second class of improvements are often inferior to the original, but are resorted to [to] evade the patent. They are called equivalents, because the patentee describes that which he deems to be the best; he cannot describe all of them, and his patent is supposed to cover all the known means of doing that function. Where invention begins and mere adaptation of mechanical means ends, is the most difficult question in determining patents. One machine may involve the same principle as another, and be so different in form, though they perform the same functions by the same means, that a superficial observer could not tell it; a man thus cannot use the improvement without using the original invention; he has only given it an additional thought, and has taken the thoughts of the original inventor and added a new link. I can make an improvement in any invention I have ever seen, but I make use of that of the original inventor; if a man gets a patent for the improvement, he could not use the original machine without the consent of the inventor.

The original invention here was holding it down, by combining the means of planing it with that, as in Watt's engine; he condensed it in a separate vessel, and it was no difference whether that was of one form or another. Here it would be an infringement of the patent to hold the board down by any means. A board may be planed by holding it down with clamps that move with the board, and this is not the same principle, and may be done without infringing the patent. We might invent many modes of holding the board down; but they are the same idea. I might hold it down by each end.

Judge. " Is not analogous device more definite than mechanical equivalent? Equivalent implies being worth as much, and analogous device may do it better or worse."

Witness. " I prefer analogous device; but the word equivalent here has come to signify a certain thing in relation to similarity. It is understood by mechanics that a mechanical device may be equivalent to another which is inferior to it. This is the technical use of the word, and so I used it. We call every thing that generates a cylinder a cylinder; and you may change its form, ad infinitum, and still call it a cylinder, because it performs the same function."

Cross examined by Mr. Stoughton.

Witness. " I have been employed professionally to give an opinion as counsel with a view to a suit. Whether it has commenced I do not know, and my functions in that capacity ceased. Whether I will be employed under that I have not been informed. It has been some time since I read the description; but I suppose what you have read, with the drawings, *as* all the description of the cylinder in Woodworth's specification. If the knives were curved it would generate in that revolution a cylinder. That cylinder, thus constructed by a law of its own motion, must cut upward for a dip and lift cut. It would cut a curved plane, and it always must cut a curved plane. That disk, so long as the cutting edges are at right angles to the axis of rotation, cannot describe any other than a plane; and it is impossible to have a dip and lift cut. The cylinder of Woodworth, and the disk of Barnum, when considered irrespective of combination, are substantially different tools; the cutting instruments, the forms, are the same in both, but their means are different. The cutting part of the adze and jack plane are alike; they are in their aggregate forms different, but the cutting edge is the same. The cylinder and the disk are similar, so far as the rotating motion is given to both for the purpose of cutting. Wherever the rotation of the cutting instruments has a tendency to lift up the board, you must have a pressure to hold it down; and where you combine the means of holding the board down and planing it, you have the principle of Woodworth. I do not consider that Mr. Woodworth claims the cylinder or roller as his invention; but he invented the idea of holding the board down by pressure, as it moves under the cylinder, in combination with the cutters for shaving off the surface. There are various ways of applying the principle of the invention. That plate wheel has not been known very long. The Bramah wheel is very different from this. The disk wheel has been known a great many years: I suppose so far back as the early commencement of this century. The Bramah disk is entirely a different disk from this, and its operation upon the board is different. If you take that wheel there, and put it down here, and undertake to use it, the wheel revolving at right angles to its own axis, it would scratch the surface of the board; the work would be imperfect; and that was one of the difficulties why the Bramah wheel was not used. Both this disk and the Bramah disk will scratch the surface of the board, and the dip and lift cut is necessary to prevent that; the turning of the board away from the knives as they come away, but relatively to the board, it gives the knife a dip and lift cut. With the Bramah wheel, if you turned the board away, you could not plane; with this you can. The knives here are long enough to extend across the breadth of the board, and in the Bramah they did not; it was a succession of short knives. Mr. Woodworth did not describe any means of using that wheel in his specification. In the case of the cylinder it was necessary merely to hold the board down to determine its thickness, and to resist the action of the plane; in both cases it must be held away; in one it must be carried away in addition to be held away. If you hold the board firmly upon its bed with clamps moving with the board, it is no infringement."

Mr. S. "The idea of holding the board down is not new, then, if Bramah did it?"

Witness. "No, sir."

Mr. S. "I understand a distinction between pressing the board down and holding it down."

Witness. "In one case it does not perform the same office as in the other. The holding down is to determine the thickness of the board; the other to resist the action of the plane. The clamps along the edge will not determine the thickness; a clamp that would touch the entire edges, and would move with it, would not determine the thickness of the board, and it is essential that the thickness of the board should be determined. These gauges on this model have a spring at one end. I never saw a machine constructed upon that plan, and I never saw a yielding gauge. In the Bicknell machine they use a cone, and there are gauges there. I have always considered them one class of machines that used the cone and those that used the cylinder. If those gauges were fixed the machine could work, if the board was reduced to an equal thickness before hand; and if it was not reduced the machine could not work; and a mere roller across these, without the yielding pressure, would not do, unless applied to planks reduced to an equal thickness."

Mr. S. "I think I heard you say that an analogous device was a square piece of iron."

Witness. "I said a bar of iron; it may be round. If we had it, it would take enough power to overcome the friction; I have seen a machine in action in that way. I have seen machines with, and some without, small rollers close to the knife; the nearer you get it to the action of the knife the better."

Mr. S. "Is it your opinion that a good working machine may be made for use with no means of holding the board down but gauges?"

Witness. " Why not in this case as well as in Mr. Barnum's machine. I cannot, for the life of me, see what difference there is in the one case or the other. I think the gauges would work and hold the board down. I have never seen the Woodworth cylinder, but I have seen a cone operate in that way; but so far as regards that particular cylinder, I have not. I never saw a working Woodworth machine. Where the board was bent, it is not necessary, and Woodworth did not describe it."

Mr. S. " Take Woodworth's rollers, and put in that disk, and have a bed plate on the absolute plane, will the disk work with these rollers?"

Witness. It would score the board; it will answer if the board has been carried through, but it will not do to start the machine; but, if you carry the board through, it will, as well as anything else. Get the end of the board beyond the planing wheel and you can do it. You must use gauges at the commencement of the operation; after the plank has gone beyond the wheel, you can apply the roller on the end, to hold the board down; and that would keep it in its true position; and the elasticity of the board would come into operation. All machines have a gauge to guide the side of the board. It is necessary to have that gauge to hold it till it passes the periphery of the wheel, and it would be good for nothing without that. In that connection rollers would not do for gauges, for you alter the arrangement of the other parts; you have the pressure for holding down the board in combination with the cutting irons; you have the substance of the combination, but not the form; you have the pressure in combination with the dip and lift cut of the knife. It makes little difference whether you move the anvil to the hammer or the hammer to the anvil. My answers are as to principle, not as to form. I have described the difference between the two machines that are alike in principle, but different in their mode of applying that principle.

October 23, Mr. Keller continued.

Mr. S. You said that wheel was unlike the Bramah wheel?

Witness. Yes, sir. " It is constructed like the Bramah wheel, but its mode of operation is entirely different. It has a rim, arms, and shaft, but its cutters which constitute its essence are entirely different.

Mr. S. Previous to the introduction of the Woodworth planing machine, was there not a planing wheel constructed essentially like the one used by Daniel Barnum repeatedly described?

Witness. "The Bramah wheel has cutters not extending across the breadth of the board, but the defendant has his across the breadth of the board. That is the distinction so far as regards the cutting edges; as regards the use of the cutter by which the finishing cut can be made in the direction of the grain, they are entirely dissimilar. The Bramah wheel could not be used with the bend of the board, and the Barnum can; with the distinctions I have drawn, there was a planing wheel described. I referred to the Bramah wheel in my deposition;

the length may change, which, when taken in connection with other parts so far as it regards the wheel, it is a distinct instrument. I referred to the Bramah wheel irrespective of combination, and the purpose it is to perform in the organization. I think, in connection with other combination, that the length of the knife may change the principle of the machine; in connection with the organization of machinery to perform a given operation, it may entirely change its principle; if there were a succession of knives which approach nearer to the axis, this would make a different sort of knife; here the knives are in the same circle, and none approach nearer the axis than the others; until it is put in combination, the wheel is essentially the same as the Bramah wheel. Woodworth did not claim to have invented the cylinder or the rotary instruments; he combined them. My opinion has always been, that the use of these instruments in combination, as described in his patent, constituted his invention. In his original patent he says he did not invent the cutter wheels, and so I could not have had another opinion; I may have sworn in the beginning of the case that the cylinder plane was new at the time the patent was granted to him, and was the proper subject for a patent, independent of any combination. I cannot say if I swore that the cylinder plane in Woodworth's patent was new at the time the patent was granted; if I did, I have changed my mind since. The leading principle of the Woodworth invention is, the controlling the plank while passing under the operation of the planes, by pressure, which holds it down to the bed, when that is combined with the planes and other instruments for reducing the surface, determining its thickness and resisting the action of the plane. I have always looked upon the use of pressure as the leading principle of this invention; in the great trial in Boston, I gave an account of the importance of the pressure roller in connection with the planing cylinder, and that, I believe, was the first time I gave the principle of the machine; before that I had spoken of the reducing of the plank to the thickness, and at that trial I explained the office peformed by the pressure rollers."

Mr. S. I want to know if you have sworn that the construction of the main and side cutter wheels, and their combination for planing the surface of boards, and tongueing and grooving their edges at the same operation, constitute the leading principle of this invention."

Witness. That taken in connection with the organization of the——

Mr. S. Irrespective of other things; and I wish to ask if you have ever sworn that it was not necessary to describe parts minutely in the patent?

Witness. "Certainly, sir. When I was examiner of patents I advised persons not to describe all the minutia, because they are undergoing changes, and the changes are so infinite that it tends to limit the patent to the mere details instead of the essence of the invention. It is very likely that I swore that persons unacquainted with the range of invention are too apt to be governed by external features; and in this instance it should not be forgotten that the invention lies in the rotating planes, for the surface of the board in the construction of cutter wheels for tongueing and grooving, and all that remains was unimportant and must be left with the mechanical engineer."

Re-examined by Mr. Campbell.

Witness. "There is the same necessity for using gauges with the cone as in the disc wheel. The cone covers so much space that the pressure rollers have to be carried off, and they substitute the gauges running on the tongue and in the groove instead of the pressure rollers as in the Bicknell machine. What is called the cone is the modification of the cylinder, the cutting edges are placed inclined to the axis to form the cone; the wheel is necessarily of considerable size to make a flat cone. They substitute this kind of gauges running into the groove and on the tongue below the surface; this is the Bicknell and McGregor machine. In Barnum's machine the board must be tongued and grooved before it can be planed; the frames may be separate, but the operations must be connected. At the time the Woodworth patent came into controversy, the great and leading conflict was with the Bentham machine, a series of circular saws of extended length, and the question was the distinction between constructing a cylinder with the knives so far apart that they would give a shaving instead of a scraping cut; then that was the subject matter, and it was not till the trial in Boston that this one came in. Up to that time the planing cylinder, that peculiar construction in contradistinction to a series of saw teeth. The knife of the Bramah machine is in the rim; they have cutters or gouges in the rim, but the planes for finishing are on the rims and run near to the axis. I never was acquainted with any machine prior to [the] Woodworth, which planed a board by rotating cutters, with the knife entirely across its surface."

After Mr. Hubbell's speech, Barnum's patent was read.

Wm. Henry Howard affirmed.

Examined by Mr. S.

I am a machine maker of this city. I make most all kinds of machines; I have been in the business ever since I was of age; but about or nearly twenty years here. I am acquainted with the Woodworth and Barnum machines and consider them unlike. The disc and cylinder are substantially different tools in mechanics. A disc cannot be used to cut mouldings; the rollers nor analogous device cannot be used in combination with the disc wheel for planing; and if the gauges, cannot be used to operate with the working cylinder with safety. Some disc machines were made in my shop. You can put gouges upon a cylinder and use them, but it would make a groove through the board longitudinally. If you were to put on the cylinder a knife with a stock or dutchman, I should think it would heat so as to nearly melt, and it would not clear, and hence be impracticable. The bending thick timber for planing it smooth, can be used only with small cutters to produce the surface, and not with planes as in that machine. That machine with the disc was made in my shop in '32, but the difficulty has been, the cutters scratch the board as it leaves. Barnum's object was to plane, the board and leave it smooth, which he accomplished by bending it away to prevent the cutters scratching it, or the back-lash, as it has been improperly (as I think) called. When it leaves the wheel, the wheel cuts on the front and must pass out on the opposite side, or the knives would touch very slightly as the material leaves; and as it is bent a little, if it is removed a hair's breadth from the disc is sufficient, enough to clear it; and I think by that mode that is a good machine. There is no dip and lift cut in it, and there is not the vibration due to such a cut. That roller on the bed of Barnum's machine, about two inches from the axis, is a friction roller to make the board move easier. The tongueing and grooving tools are simple circular saws. That instrument is a saw, and that a cutting wheel, and the tool on it a chisel, substantially different tools in mechanics."

Cross examined by Mr. Campbell.

Witness. "It is essential in a planing machine to hold the board down; it is done in Woodworth's by pressure rollers, and in Barnum's by a fence or guide. The knife must necessarily go from the finished to the unfinished surface of the board; and it is so in both machines. To finish the surface it is preferable and is necessary to make a plane surface, that the knife or cutting instrument should strike nearly at right angles with the edge of the board; but for the reducing, it is not necessary. The cutting instrument should move with the grain of the wood, and this is done in the Woodworth machine; in one sense the direction of the cutting instrument is in the direction of the grain of the wood, so far as it is in contact with the surface. At one particular point it cuts at right angles, but not exactly where it finishes, but very near it. Mr. Barnum's cuts a perfect plane on the plank. The disc wheel or knife which finishes, comes down or up as the case may be till it approaches the line under the centre of the wheel, where it cuts that line. It is at right angles with the edge of the board, but it cuts slightly further on and varies to a curve or circle. In Woodworth's, the knife is *at*, all the time, at right angles with the edge of the board."

Mr. Campbell. "When the finishing cut is made, is not that substantially at right angles to the edge of the board in both machines?"

Witness. "I cannot say substantially, because there is a variation. In Barnum's, the motion of the knife is circular all the way round, and it is the same at the finishing point as at any other, and it is describing a circle there. I have heard the Woodworth specification read. I have been engaged in making planing machines, and have made the parts for different people. I am making one now; it has no circular cutter about it, and am going to try to get a patent for it, and I am interested in the machine; my machine has no cutting wheel in it; it has a stationary knife cut."

Latrobe. "Are these teeth set?"

Witness. "There no teeth here, and no set about it."

Latrobe. "I understand you to say there is a mechanical difference between the tongueing wheel of Barnum and of Woodworth?"

Cross examined by Mr. Campbell.

Mr. Campbell. "The teeth in that are set; are they?"

Witness. "The two outside ones are. There is no lift motion in the wheel, it cuts straight forward. You do not get the lift cut by the bend of the board; the knife cuts in a straight plane and forms a wedge of the shaving; it is thicker at one end than at the other; the end towards the unfinished part of the board is the thickest; the knife slides off towards one end of the board. The shaving is made thinner as it slides off; *before* I did not fully consider the question you made before; it could not leave off abruptly; the shaving gets thinner as the knife leaves the board; but you have no lift cut, because it is across the board in a direction not to leave, but to drive the board edgeways, that is the tendency of the motion. My idea of a dip and lift cut is, lifting it straight up; it is no matter if the board is flat or edgeways; it is the direction of the motion of the cutter, and the motion of the board has nothing to do with it. The cutter moves in a plane. I first saw that roller at the back of the plank to day, the board is bent at that point or near it; if it is right under the axis it is right at the point; the roller does not bend the plank; the gauges would bend it without the roller, and the roller is not exactly at the point of bending; it is a couple of inches one side."

Cross examined by Mr. Latrobe.

Latrobe. "You say these are saws, and this is a chisel; are you certain of that?

Witness. Yes, sir; and I will put my professional experience on that point."

Latrobe. "Lay this chisel upon the tooth of that saw; don't they, as nearly as may be, correspond in their angles?"

Witness. "They do."

Re-examined.

Using another saw, objected to by Mr. Latrobe.

Mr. Latrobe. "You presented in your examination in chief this saw and this chisel, and the witness said they were mechanically different tools. Now, the right of cross examination belongs to me, and I take this saw and chisel, and lay them one upon the other, and ask the witness if there is any appreciable difference in the angles of their edges. My cross examination has been confined to the examination in chief, and your re-examination in chief must be confined to my cross examination; and you cannot ask him anything about other parts of machinery."

Mr. S. "Mr. Campbell asked the witness something in relation to our tongueing and grooving machine; I had confined my re-examination to the tool of the cross examination, and I believe I am not violating the technical rule."

Re-examined by Mr. S.

Mr. S. "Is that a saw or chisel?"

Witness. "It is a saw."

Mr. S. "Take the roller out of that machine, which is a friction roller—would it work well?"

Witness. "Yes, sir; but the board would push a little harder. That is the only effect, I think; the board would still be curved."

Mr. Riley. "Would not the shaving be thicker in the middle?"

Witness. "It would increase towards that end where it leaves off."

Robert Wolcott, sworn.

Examined by Mr. S.

"I am a machinist, and have been upwards of thirty years. I am not thoroughly acquainted with either of these machines; I never made either, but I think I know all the parts, and I know the moving principle. I will fix a principle first, if the court will allow me. I understand this case at issue is an infringement of the patent right, and I suppose I am called upon to give my opinion. All machines have a first principle. The mill has a first principle, and that is the stone that grinds the wheat. The grindstone is different; it does its work upon the periphery; both revolve. The principle of the Barnum machine is a cutting wheel, and the principle of the Woodworth is a cutting cylinder; the Barnum performs its work on its face, as the millstone; and the other on its periphery, as the grindstone. These I fix as the principles. Then there are other parts, as the guides, which are not found in the Woodworth machine; I think it has no friction or pressure rollers; I do not think the cylinder and disc wheel are alike in principle. I think the disc will plane boards well without the bending of the board, for there will be a back lash, and destroy what you have done. Barnum's improvement is the curving and bending the board; the wheel is not entitled to it; I saw it long before I knew Barnum. The back lash was the difficulty before; the wheel is described in many foreign books; I never saw the disc cut mouldings, and I think it could not. You can put gouges upon the cylinder, and use them without cutting the board longitudinally; by putting on different cutters there, you cannot use them to plane the entire width of the board. You could cut off part of the board with the gouges, and then let the broad knife come in and do the business of the smoothing plane."

Cross examined by Mr. L.

Latrobe. "You say the principle of this machine is the grindstone, and that the millstone?"

Witness. I say they are *as* different; one does its work on its face by revolving, and the other on the periphery."

Cross examination of John Gibson, Alexander McHench, and Wm. Gibson, read.

Examination of George Rhodes and Mr. Throckmorton read.

After this Mr. Campbell read the deposition of Wm. P. N. Fitzgerald, of the Patent office.

Mr. Campbell then withdrew the objections to the reading of Mr. Keller's deposition of 1844, and it was read, and is as follows, viz:

Testimony given by defendant on the trial.

WILLIAM VAN HOOK
vs.
EPHRAIM SCUDDER and
JOHN H. DAYTON.
} In equity.

Circuit court of the United States for the southern district of New York.

Charles M. Keller, of the city of Washington, being duly sworn, doth depose and say as follows, (viz:)

I am one of the examiners in the Patent office of the United States, appointed in conformity with the provisions of the act of Congress of the 4th of July, 1836; and have held the said appointment, and discharged the duties thereof, since the 10th day of July, 1836. The duty thereby devolving upon me is, to examine such applications for patents as are referred to me by the Commissioner of Patents; to inquire into the novelty thereof, and report whether the same are patentable; and if so, to see that the specifications and drawings are in conformity with the requirements of the law. There are two principal examiners in the office, (viz:) Dr. Charles G. Page and myself; to the former is assigned the duty of examining all applications which involve the investigation of chemical processes and combinations and the like, while to me are assigned such as belong more particularly to the mechanical arts and manufactures, &c. This is, however, but a general classification of our duties, and is liable to be varied by the current business of the office. Prior to my appointment as examiner I was the machinist of the Patent office, and held that appointment from the year 1829, until my appointment as examiner. I have examined the description and plans of Bramah's planing machine, patented in England in the year 1802, and described and represented in Rees' Encyclopedia, vol. 28, and in my opinion it is entirely different from Woodworth's machine in the construction and operation; and I cannot see how a machine like Woodworth's could be constructed from the description and drawings of Bramah, without inventing the essential parts; for in Bramah's the planing is effected by attaching a number of gouges to the edge of a rim, or disk, by which the rough surface is cut away, and then smoothed by plane irons attached to this rim, or disk, within the gouges, that is to say, near the shaft of the rim, or disk. By this arrangement, it will be observed, that the face of the cutters, and the plane of the surface cut, are at right angles to the shaft of the cutter wheel; while in Woodworth's machine these are parallel with it. By this variation in the arrangement of the cutters, the direction of the cut must be in curves, nearly across the grain of the wood; whereas in Woodworth's the cutting is with the grain, in the direction of the length of the board.

I have also examined the description of rotating cutters patented by Samuel Bentham on the 23d of April, 1793, and published in the London Repertory of Arts, vol. 10th; and have to state that, [in] my judgment a competent workman could not from that description make a rotating plane such as is described in Woodworth's patent, without inventing. And I further state, that the cylinder plane described in Woodworth's patent, to the best of my knowledge and belief, was new at the time the patent was granted to him, and was the proper subject of a patent independent of any combination. And that a competent workman could, from Woodworth's specification, construct a machine similar to the machines known as the Woodworth machines in all the essential particulars patented by him. And that the accompanying paper, marked A, dated at Washington, May 5th, 1843, and signed by myself with the drawings marked B, are to be considered as explanatory of my views on the subject herein named, and are true to the best of my knowledge and belief.

CHARLES M. KELLER.

District of Columbia, *Washington, to wit:*

Be it remembered, that on this 15th day of May, 1843, before me, the subscriber, chief judge of the circuit court of the District of Columbia, personally appeared Charles M. Keller, and made oath in due form of law, that the facts stated in the foregoing writing by him signed, are true to the best of his knowledge and belief; and I further certify, that the paper and drawing referred to on the third page, as marked A and B, are hereto annexed.

W. CRANCH.

District of Columbia,
Washington city, to wit:

I, William Brent, clerk of the circuit court of the District of Columbia, for the county of Washington, do hereby certify, that the honorable William Cranch, before whom the above affidavit was made, and who has thereto subscribed his name, was at the time of so doing chief judge of the circuit court of the District of Columbia, duly commissioned and qualified.

In testimony whereof I hereunto subscribe my name, and affix the seal of said circuit court, this 15th day of May, 1843.

W. BRENT, *Clerk.*

A.

Washington, D. C., *May 5th*, 1843.

Sir: In answer to your inquiry I have to state, that I have examined the specifications of the patents for planing machines, granted to William Woodworth on the 27th of December, 1828, and to Uri Emmons on the 25th of April, 1829; and that the following is my opinion of the principle on which these two machines are constructed and operate, and the particular in which they resemble each other, as well as the machines in general use known as the Woodworth planing machines.

The essential and leading principle common to both machines, as described in their patents, is the employment rotating planes or cutters by which the surface of the board is planed by such rapid and successive cuts, compared with the slow motion of the hands, as to make a smooth and plane surface, together with the employment of rotating cutters placed at each edge of the board, and having their arbors at right angles with the shaft of the main rotating plane. Thus I have given the great and leading principle of this invention, or the character common to both, by which it has been rendered truly useful; prior to the existence of this invention, the only thing known on this subject for a plane smooth surface is found in the 10th volume of the London Repertory of Arts, which gives an account of a patent granted to Samuel Bentham, on the 23d of April, 1793, for his invention of various new and improved methods and means of working wood, metal, and other materials. According to this patent, wood and metals may be reduced and planished, or mouldings cut thereon, by means of rotating cutters, but the manner in which these rotating cutters are to be formed is a matter of some difficulty to ascertain from the publication, if the person reading that description will carefully exclude from his mind all the knowledge on this subject which he has derived from the machines put in operation since the date of Woodworth's patent, as this description is very obscure.

So far as I am able to understand the construction of these cutter wheels, with many years of experience in the reading and examination of specifications, they are as follows—reference being had to the accompanying illustrative drawings. The cylinder cutter under this patent is in fact a circular saw of very great thickness, as represented by A, fig. 1. The teeth or cutting edges of course to be made in the manner of saw teeth. A modification of this, according to the description, is to making it of pieces in "annular segments" attached to an included cylinder. This phraseology might mislead the casual reader, for he might suppose that it was intended to make it of segments, of an annulus or ring, instead of "annular segments." The difference when observed being very great, I am thus particular, for this very mistake has been made by several persons. If composed of annular segments, according to the description of this modification, it would be as represented by B, figure 1 and figure 2, and consist of a series of circular saws, slipped on to a cylindrical shaft of greater dimensions than usual, a sufficient number of these plates being put on, one after the other, to make the required length of cylinder; fig. 3 represents one of these annular segments, and the remaining modification is to make the teeth distinct from each other, and from the cylinder from which they project. How these teeth (not cutters) are to be included and fastened to the cylinder, I am at a loss to ascertain, as there is not one word on this subject in the description. We are not at liberty to say, however, that these "teeth" were intended to extend entirely across the length of the cylinder, for then they would, in technical language, be termed cutters, instead of "teeth," the latter term *be* confined to small instruments, such as the teeth of the saw. In addition to this, it may be added, that cutters in the form of gouges had *be* attached to a wheel for performing the operation of gouging in reducing and shaping articles of wood. And gouges and plane irons had been attached to a rim or disc for planing. In the preceding I have explained the limit of improvement which this branch of the useful arts had attained prior to the inventions of Woodworth and Emmons. So far as information can be gathered on this subject, and it must be evident that the idea of making a planing machine was very limited, and that these rotating cutters, thus constructed, would not in fact perform the operation of planing, but would scrape or rasp the wood; whilst the rotating plane described and patented by Woodworth does in reality cut or plane the wood, and is adapted by its connections to perform that operation. It differs from the one described in this English patent in making each cutter, or fig. 4, of one single piece, separate from the body or stock, and attached at each end to a disk—the two disks being attached to an arbor e, properly supported by and bearing in manner known to every mechanician. These cutters can be attached with their cutting edges parallel with the axis or arbor, or diagonally. In Woodworth's patent there is further provision for adapting the cutter wheel to all sizes of work, by having one of the disks moveable on the shaft to be adapted to receive cutters of various lengths. This was evidently a precautionary provision inserted in manner of a suggestion, should it become necessary. The rotating plane is very imperfectly described in Emmons' patent, the whole description being in the following words, viz: "A cylinder of wood or metal, on which knives are placed straight or spiral, with their edges exactly corresponding with each other, having from two to twelve knives or edges." And again, in another part: "The cylinder made with two or four spiral edges or knives, six or ten inches diameter, and hung on a cast-steel arbor." How these knives or edges are to be attached to the cylinder is of course left, as much of such details must be, to the judgment of the constructor. I therefore presume that the knives were bolted or secured to the cylinder in the manner represented in fig. 5, in which f is the cylinder and n the knives. The only difference between the two patents in this the first feature, is, that Woodworth attaches the knives or plane irons, (as they should be termed,) to two circular heads or disks on an arbor, whilst Emmons attaches them to a cylinder. The principle, however, of using cutters or plane irons of the required length separate from each other, and from the body or stock of the rotating plane, for the actual operation of planing a flat and even surface, instead of rasping or tearing, is the same in both, with the exceptions that attaching the cutters or plane irons to a cylinder will not afford a free escape to the shavings; whereas this object is attained by attaching them to heads, in the manner pointed out by Woodworth's patent. The next feature of importance and novelty is to be found in the rotating cutter wheels for tongueing and grooving the edges of the boards as they are planed on the surface. It becomes the more important from the fact that Emmons admits in his patent that Woodworth was before him in this feature, for he only claimed his modification in "contradistinction to the mode used by Woodworth." In Woodworth's patent these are described as consisting of separate cutters, (p. 2, fig. 6,) attached to a disk (K) on an arbor adapted to the other parts of the machine, and to the reception of the motive force; whilst in Emmons' patent they are described in the manner of saws or burrs, as represented in fig. 7, and therefore acting on the wood in the manner of a saw instead of a plane. Cutters thus made had long before the date of this patent been used for various purposes, and will not answer the purpose to which Emmons applied them; and the machines in general use in this particular are made in accordance with Woodworth's patent. The construction of the main and side cutter wheels, and their combination together for planing the surface of the boards, and tongueing and grooving the edges at the same operation, constitute the leading principle and the essential character of this invention, the other parts being mere details which may be varied at the pleasure of the constructor. The arrangement of band and cog wheels for operating the cutter wheels is one of the details generally left to the judgment and discretion of the practical constructor, who is supposed to be acquainted with the rules of proportions and adaptation of parts necessary to the practical operation of such things, particularly as these may and should be changed under various circumstances; but these arrangements do not come under the head of inventions, and are not patentable. It was not, therefore, necessary to describe them minutely in the patent, for the adaptation of the frame, gearing, and the proportion of the various parts to that of organization of machinery, which is considered the invention, and which in this instance is represented by the cutter wheels, never has been considered as requiring a minute description in a patent to render it valid. The manner of feeding in the boards, so as to be presented in a proper manner to the action of the cutters, is described in Woodworth's patent in an indefinite manner, as being a matter of secondary consideration, the claim not resting on any part of it; and as there described the boards to be planed, &c., are placed in succession on a carriage, which may be operated by rollers or rack and pinion, and guided in the same manner as a saw-mill carriage; it being necessary of course to guide it in a straight line to insure straight edges to the board, to make a good fit in the tongue and groove. In Emmons' patent it is described (the feeding in of the boards) as being effected by means of a carriage, or by passing the boards without a carriage between an upper and lower set of feed rollers—the lower set being operated by band or cog wheels, and the upper set acting merely as pressure rollers. Both of these methods of feeding in are claimed by Emmons in his patent.

The machines in general use are in this particular made in accordance with one of the modes of feeding described by Emmons, viz., the rollers without the carriage; but it should be kept in mind that this method of feeding in had long before been known and used for other purposes, and whether he had a right to claim its application to a planing machine is a matter of great doubt in my mind. It is also provided in Emmons' patent that the main rotating plane be made with its bearings working in sliding boxes, governed by screws to adapt the machine to, and regulate it for, planing different thicknesses of boards; whilst in Woodworth's patent it is simply stated that the machine can be adapted to different thicknesses of boards by means of the carriage.

What, then, are the essential points of difference between these two machines, as described in the two patents, and how do they differ from or resemble the machines in general use? I have stated, that in the first feature [of] the rotating plane for the surface of the boards, they are the same, except that Woodworth's will clear the chips and Emmons' will choke, and that they both differ from the larger part of the machines in operation, many of them having the plane irons attached to flanches, protruding longitudinally from the shaft, in accordance with an improvement patented by Woodworth since the date of his original patent, but they all have the plane iron extending entirely across and separate from the body or stock of the rotating plane, and so far they do correspond with the original patent in principle. As to the second feature—the rotating cutters for tongueing and grooving the edge of the boards—nearly, if not all the machines in operation are made in accordance with Woodworth's patent, and not according to Emmons'; for, if they were made according to the latter, they could not answer the purpose, as they would rasp instead of cutting or planing. Here, then, we find that, in the essential and leading character of the invention—that which in fact is the invention—the machines now in use are in accordance with Woodworth's patent; and in one of the features of this character—the tongueing and grooving—they not only are not in accordance with Emmons' patent, for, if they were, they would not answer the purpose, but they are with Woodworth's. As to the manner of setting the rotating plane for different thicknesses of boards, by screws acting on the sliding boxes that receive the bearings of the plane, this is a method of regulating adapted to rotating apparatus, and generally used long before the date of either of these patents; and every competent mechanical engineer had only to be told that it was desired to regulate and set the rotating plane in Woodworth's patent, and he would have adopted the very plan described in Emmons' patent—the plan then known for effecting such an object. It is not even claimed by Emmons in his patent as an invention and improvement. And as to the feeding in of the boards with rollers, and without a carriage, the machines in general use are made in accordance with Emmons' patent; but it must be remembered that this mode of feeding had, long before the date of his patent, been used for various purposes; and, under the most liberal construction, all that he can claim merit for was the application of it to this purpose; and a very serious question would arise, whether such an application is justly and legally the subject of a patent.

Persons unacquainted with the range of inventions do not often discriminate in giv[ing] opinions as to the resemblance of two machines. They are too apt to be governed by external circumstances and by the details, instead of taking those leading and essential features by which an invention is characterized; and, therefore, in this instance it should not be forgotten that the invention lies in [the] rotating plane for the surface of the boards, in the construction of the cutter wheels for tongueing and grooving, and in the combination of these for the purpose of planing, and tongueing, and grooving boards at one operation. These features being described and understood, all that remains is comparatively unimportant detail, which, in similar circumstances, must be left to the mechanical engineer or constructor, although *sum* of these may become the subject of patents as improvements, always secondary to the leading and main principle. In this, the proper view of the subject, the machines in general use, known as the Woodworth planing machine, are in accordance with Woodworth's patent, and only in part with Emmons'.

Yours, very respectfully,

CHAS. M. KELLER.

Circuit court of the United States, for the southern district of New York.

Wm. Van Hook,
vs.
Thomas W. Wood.
} Bill in equity, with a prayer for an injunction.

Charles M. Keller, being the same person who gave the annexed deposition or affidavit in the case of the above complainant against Scudder and Dayton, having been duly cautioned and sworn, deposeth and saith, that the annexed deposition, by him subscribed and sworn to, and the paper and drawings thereto annexed, are true, with the following exceptions, (viz.:) In that part of the statement in which he describes the mode of making the cutting roller described by Bentham in the Repertory of Arts, it is stated that the annular segments therein mentioned are not segments of an annulus or ring, but that the roller is made of parts, as if composed of a series of circular saws slipped into an included cylinder or shaft. At the time he entertained this opinion, he had not read with attention that part of Bentham's specification in which he describes the various methods of making a circular saw, and he now finds that, construing the description of the cutting roller by the description of the saw, the annular segments are segments of a hollow cylinder. In another part of this statement it is stated that the machines in general use have the plane irons attached to longitudinal flanches projecting from the shaft, in accordance with an improvement subsequently patented by Woodworth. This is not correct; this improvement was not patented by Woodworth. He finds that, on a further investigation of this invention to which he has devoted much time since he made the within affidavit and statement thereto appended or annexed, that he overlooked or omitted to point out one essential feature of Woodworth's invention, (viz.,) the rollers represented in the drawings of Woodworth's patent as being placed above the board to be planed, and on each side of the rotating plane. The office of these rollers is to keep down the board and prevent the cutters or planes in rising from lifting up the board, which would be met by the next plane and gashed. He is of opinion that these rollers, or some equivalents, are indispensable to the successful operation of a planing machine, operating on the principle of the planing machine.

CHARLES M. KELLER.

D. C., WASHINGTON CITY, *ss:*

August 2d, 1844. Personally appeared before me the above named Charles M. Keller, and made solemn oath to the truth of the foregoing affidavit, by him subscribed.

W. CRANCH,
Chief judge of the circuit court of the District of Columbia.

Charles M. Keller, of the city of Washington, in the District of Columbia, deposeth and saith: I am an examiner of patents in the United States' Patent office, as will more fully appear in an affidavit prepared and sworn to by me some months since, to be used in the same cause as this. I have examined with care and attention the specification and drawings on which letters patent were granted to William Woodworth, on the 27th of Dec., 1828, for a machine for planing, and tongueing, and grooving boards, &c., by means of rotating planes and cutters; and I do consider that the specification and drawings are sufficiently full and clear to enable any competent machinist to construct and use a machine substantially similar to the planing machines generally known as the Woodworth planing machines. I do not consider that to enable a competent machinist to construct and use such a machine, it was necessary to describe the proportions of the various parts of the machine, or any part of it, or to give the relative velocities of the moving parts, as these are questions which are understood by every competent machinist who is taught, in the study of his profession, how to proportion the various parts of his machine and to regulate the relative velocities of the various parts in accordance with the kind and quality of work to be executed and the amount of power he has at his command; as, for instance, in constructing a planing machine on the principle of Woodworth's, he would first decide what kind of work he wished to do with it; if he desired to make three hundred cuts per inch, the planing stock to have three planes, he would so proportion his gearing as to give to the planing stock one hundred revolutions, whilst the periphery of the feed rollers or the carriage moved one inch; these to be changed in proportion to the number of cuts to be given to a given length of board. As these proportions and relative velocities are to be changed in proportion to the kind of work and the quality of the material to be acted

upon, it could not be expected that an inventor would, at the time the patent was granted, anticipate the variety and quality of materials to which the machine might eventually be applied; and, therefore, to require an inventor to be thus specific in drawing up his specification, would be to require, in some instances, an impossibility, and at others to do what might mislead the constructor, for the given proportions might be followed by the constructor in cases where they would not be applicable; but by leaving these questions to the judgment of the constructor and to the rules of art, no such mistake would be likely to occur; it is for these reasons that, in discharge of my duty as examiner, I have generally suggested to applicants for patents to avoid giving the proportions and relative velocities in their specifications; and there are very few of the specifications drawn up by those who make it a profession, that contain either proportions or relative velocities, as any change in these cannot affect, in any manner, the principle or character of the invention, and no man is worthy the appellation of machinist who is not sufficiently conversant with the rules of art to ascertain these. I have been called upon in the discharge of my official duties to compare the machine described and represented in the specification and drawings of William Woodworth's letters patent above recited, with the inventions described in the letters patent granted in England to Samuel Bentham on the 23d of April, 1793, for his invention of various new and improved methods and means of working wood, metal, and other materials, and published in the London Repertory of Arts, &c., vol. 10th, pages 221, &c., &c., and have been unable to find in Samuel Bentham's specification any description of a planing machine in principle or character substantially similar to the machine described and patented by the said William Woodworth, and in general use under the name of the Woodworth planing machines.

And as this was an important question, I consulted my associates in the examining department of the Patent office; and after a full and careful examination, and being cautioned as to the importance of the question at issue, they all concurred with me in opinion that Bentham's specification does not describe a planing machine substantially similar to Woodworth's. CHAS M. KELLER.

District of Columbia, *county of Washington, to wit:*

Be it remembered, that on this 19th day of September, in the year of our Lord, 1844, before me, the subscriber, chief judge of the circuit court of the said district, personally appeared Charles M. Keller, to me well known, and in due form of law made oath, that the foregoing paper by him signed is true to the best of his knowledge, judgment, and belief, and that the facts therein stated are true.

W. CRANCH.

[For drawing B, see original, page 390.]

And thereupon the jury are charged by Judge Grier, as follows, to wit:

Notes of charge.

In circuit court U. S., for E. dist. of Pennsylvania.

JACOB P. WILSON
vs.
DANIEL BARNUM.

Issue directed from chancery.—Notes of charge.

This case was commenced on the chancery side of this court, by a bill in equity, filed by Jacob P. Wilson, who is assignee of what is commonly known as the Woodworth patent, for planing and grooving boards, complaining of an infringement by the defendant, Daniel Barnum, and praying an injunction to restrain him from using certain machines in his possession, and from making or vending the same to others to be used.

In the defendant's answer to this bill, he denied—1st. The originality of the plaintiff's invention; and 2d. That the machine or machines used by him infringe upon the plaintiff's invention; and claims that his machine is a new combination of mechanism invented by himself, and for which he has received a patent from the United States.

If the Woodworth patent were a new one, the court would have ordered an issue to try the question of its originality; but as that question has been so frequently investigated and decided in almost every circuit in the United States, and passed upon and confirmed by the judgment of the Supreme Court, we think it is time it should be put to rest. The monopoly granted by law to the inventors of new and useful machines, is but a just reward for the ingenuity, labor, and money, which have been expended in perfecting them. But although such persons are often great public benefactors, the privileges granted to them as a remuneration, have too often been found valueless, and the profits of their discoveries or inventions are appropriated by others, while the inventors are ruined by endless litigation. The evils of this course fall not alone upon the inventor, but on the public, who are deprived of a free use of the invention in consequence of a continuance of the monopoly, which becomes necessary to remunerate the inventor for his losses by litigation.

The patent for this invention was first issued in 1828, to William Woodworth; it has been renewed by the Patent office, and afterwards by an act of Congress; and on the 8th July, 1845, the original patent was surrendered on account of some alleged defects in the specification, and an amended patent issued. After having withstood twenty years of litigation, and received the sanction of Congress, the attempt to annul it on the ground of want of originality should be considered hopeless, and be received with little favor by the court. The issue submitted to you, therefore, is not to try whether W. Woodworth was the inventor of the machine described in this annexed patent, but "whether the making, vending, and using of either or both, separately or in combination, and if either, which of the machines of the defendant, referred to in his answer in this cause, is or is not an infringement of the amended letters patent granted to William W. Woodworth, as set forth in complainant's answer in this cause."

A question of infringement is a question of fact, and it is for this reason that it is submitted to a jury, as the most competent tribunal to settle such a question.

But although a question of fact, and to be decided by comparison, it is often a most difficult one.

It may involve questions of science, or of arts, with which the court and jury are not familiar; and witnesses, of knowledge and experience, may differ in their opinions.

Principles of law may be involved, and a clear apprehension of them necessary to a correct conclusion.

In the statement of these principles, whether of mechanics or law, terms are often used which are vague, indefinite, or so difficult of definition, that their application to the facts may lead to erroneous conclusions, unless great care and discrimination be exercised. Hence the opposite conclusions, which are often arrived at by men of equal knowledge, experience, and skill; and thus it often assumes the appearance of a matter of opinion, and not of fact.

In the application of the principles of law and mechanics, which complicate the question of fact, there is no one word which is used more vaguely, and more difficult of a definition, of universal application than the word "principle" itself. You have heard much of the "principle" of a machine, both from witnesses and counsel. The word is most commonly used to signify elementary truths, or established doctrines, when we speak of law, or any other science. But when applied to a complex machine, whatever motion we may represent by the term, or whatever definition we may give of it in the abstract, will be found difficult of application in many instances in the concrete. While many minds will arrive at correct results by comparison of things in the concrete, they are incapable of analyzing the process of reason, or explaining in abstract terms how they have arrived at their result. Another difficulty in the definition of this and other abstract terms is, that when defined, some of the terms of your definition are of the same subtle, slippery, and indefinite meaning with the subject of the definition.

A learned judge, in speaking on this subject, says: "The forms of the two machines differ, but when at work the principle is the same—that is, both have the same peculiar structure and constituent parts, which is the true legal meaning of the principle of a machine." (Per Just. Wayne, in Motte *vs*. Burnet, quoting Barret *vs*. Hall, 1 Mason, 470.)

"The principle of a machine, says Mr. Justice Story, (1 Gallison, 458,) is the modus operandi, the peculiar device or manner of producing any given effect. If the same effects are produced by two machines by the same mode of operation, the principles of each are the same. If the same effects are produced but by combinations of machinery operating substantially in a different manner, the principles are different."

A mere change in the form or proportions of a machine will not constitute a difference of principle. But it is often difficult to say what is form and what is principle, and there is no subject on which witnesses of equal skill and knowledge in mechanics are more apt to differ.

The question for your consideration, as I have before stated, is one of infringement; and whether both or either of the machines used by defendant, and which now stand before you, infringe upon the machine patented by W. Woodworth, and described in his amended specification of 1845.

I. Let us inquire what is the meaning of the term infringement.

This, like the word previously noticed, will be better understood by describing certain things which are, and others which are not, within its meaning, than any attempt at strictly logical definition, applicable to all cases.

"An infringement (Curtis, § 220) involves substantial identity, whether that identity is described by the terms "same principle," same "modus operandi," or any other. It is a copy of the thing described in the specification of the patentee, either without variation or with only such variations as are consistent with its being in substance the same thing. What will amount to such a substantial identity cannot be stated in general terms. We can only look to individual cases for illustrations of the general doctrine."

"If the invention be a machine, it will be infringed by a machine which incorporates in its structure and operation the substance of the invention; that is, by an arrangement of mechanism which performs the same service, or produces the same effect, in the same way."

"But if the difference between the two machines is not a mere difference of form; if there is a material alteration of structure; if they are substantially different combinations of mechanism to effect the same purpose by means which are really not the same in substance, then the one will not be an infringement of the other."

Where machines differ in form and structure, the jury should inquire whether it is only colorably different; that is, whether it differs merely in the substitution of what are called mechanical equivalents, or well known analogous devices for the contrivances of the patentee.

Therefore, if the two machines are alike in principle; if one man was the first inventor of the principle, and the other had adopted it, and though he may have carried it into effect by substituting one mechanical equivalent for another, still you are to look to the substance, and not to the mere form; and if it is in substance an infringement you ought to find that it is so.

But if in any art there be two well known distinct tools, machines, devices, or contrivances, which as used are defective in their operations, and A improves one and B the other, so as to produce the same beneficial result, B's improvement cannot be called an infringement of A's, unless he appropriated the principle of A's improvement, or the one naturally suggested the other. But if A's specification of the means or combinations, used for improving his machine, cannot be practised or used for the improvement of the tool or machine which is the subject of B's improvement. they may well be considered distinct inventions, and the latter no infringement of the former.

Again, 16 Peters, 336, per Chief Justice Taney, et totam curiam: "Where the patent is for a combination, and the improvement consists in arranging and combining the different parts together, in the manner stated in the specification, for the purpose of producing a certain effect; if none of the parts are new, or claimed as new, and no portion of the combination less than the whole is claimed as new, or stated to produce any given result, and the end in view is proposed to be accomplished by the union of all arranged and combined together in the manner described, then this combination in the manner described in the specification is the improvement—is the thing patented; and the use of any two of these parts only, or of two combined with a third, which is substantially different in form or in the manner of its arrangement and connection with the others, is therefore not the thing patented, and is no infringement. It is not the same combination if it substantially differs from it in any of its parts.

2. Having thus stated the general principles or doctrines of law applicable to this case, our next inquiry will be, wherein consists the invention or combination of machinery employed by the plaintiff to effect the object proposed, in order that you may judge whether the machine or machines used by the defendant, and now before you, are the same in their mode of operation, and therefore the same in principle, and an infringement of the plaintiff's patent.

For this purpose it is unnecessary to give a particular description of the machine as set forth in the plaintiff's specification, as the machine itself is before your eyes.

What is the combination of mechanism, its peculiar structure, and constituent parts, which are said to constitute the principle of the machine, are best described by the patentee himself; and to this we must look without reference to any peculiar notions advanced by witnesses on that subject.

The patentee is required to give a specification of what he claims as his own invention, or what is called the principle of it, that others may be informed of his claim and not left ignorantly to invade or encroach upon his rights.

1st. It purports to be the invention of a "new and useful improvement in machines for planing and grooving and dressing boards," &c.

2. It is a combination of instruments already known, by which a result is produced with greater facility and less labor and expense than any heretofore attained by any combination of the same tools in machinery. It is the employment of rotating planes, called in the specification a planing cylinder, which may be made to revolve either horizontally or vertically, in combination with rollers, (or other analogous

device,) to prevent the board from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface. Also the combination of rotating planes with cutter wheels for tongueing and grooving, for the purpose of tongueing and grooving boards at one operation; also the combination of tongueing and grooving cutter wheels, for tongueing and grooving boards at one operation; and, finally, the combination of either the tongueing or grooving cutter wheel with pressure rollers. The patentee, as you may observe, claims four different combinations of his machine in the whole and in parts; and has not left it open to another to evade his patent by the mere severance of his whole combination into two distinct machines.

Let us take these four several claims on the words of the specification, and see what is claimed in each, so that you may be enabled to discover whether the machines of the defendant, now before you, or either of them, come within the principle or combination, or have the peculiar structure and constituent parts, of either.

1. The first claim in the specification is in these words, "what is claimed as the invention of William Woodworth, deceased, is the employment of rotating planes, substantially such as herein described, in combination with rollers, or any analogous device, to prevent the boards from being drawn up by the planes when cutting upwards, or from the reduced or planed to the unplaned surface as described."

As the machine patented by the defendant is alleged to be the same in substance with the combination here stated, this will form the first subject of your inquiry.

1. You will observe that the patentee does not claim to be the inventor of planing cylinders, nor of pressure rollers, nor of pressure, nor of the dip and lift cut, nor of planing from the finished to the unfinished surface, nor of planing on the length in opposition to across the board, but for a combination of these rollers or other device, effecting the same purpose with rotating planes, substantially such as described. What sort of rotating planes have been described? The patent describes them as cylinders, and the action of the planes as cutting on a curved line, making the cut like an adze, or what is called a dip and lift cut. The difficulty to be overcome with this sort of rotating planes was their tendency to lift the plank and cause a vibratious motion; to obviate this the pressure rollers were used. The question for your decision will therefore be, has the defendant's machine the rotating cylinder, or any other device substantially the same, and operating in the same way, combined with pressure rollers, or any known mechanical equivalent, used for the purpose of preventing the boards from being drawn upwards? If so, he has infringed the plaintiff's patent.

Is the wheel used by the defendant substantially the same as that described in this patent; or is it an entirely different machine, and the pressure guides used in connection with it, used for an entirely different purpose; and to obviate a difficulty in its use entirely different from that proposed to be overcome by the pressure rollers in the plaintiff's machine? If so, it is no infringement of the plaintiff's patent."

Neither the plaintiff or defendant is the inventor of the Bramah or disc wheel, or of cutters rotating cylindrically. They were both known before, but not successfully applied. The plaintiff's patent has been completely successful in overcoming the difficulties attending the use of cutters rotating on cylinders; has the defendant merely applied the principle of his invention to a substantially similar tool or machine; is there any thing in the plaintiff's specification, or the combination claimed therein, which would obviate the difficulties attending the use of the disc?

The cones used in former cases are evidently mere colorable evasions; all the intermediate cones between a cylinder and a disc may be made by a corresponding inclination of their axis, to act substantially as cylinders, as was remarked by my brother Kane in a late case. "The deviation from the strict form of the Woodworth machine towards that of Bramah, or from the latter to the former, may go on increasing till the appropriate action of the original machine effectively disappears. The cylinder, by a series of progressive changes, having lost itself in the disc, or the disc in the cylinder, it is impossible to define for practicable purposes that angle or degree of deviation at which one of these geometric forms should be said to pass into the other." The same might be said with regard to the rotary cutter or chisel and the saw, which yet our senses demonstrate to us that the extremes are entirely different instruments, tools, or machines. If the defendant has discovered a mode of applying the disc to use in the planing of boards by some combination not set forth in the plaintiffs patent or suggested by it, he may be a meritorious inventor; but if he has only changed the form and proportions of his machine in order to a mere tolerable evasion, to cover while he pirates or steals the invention of the plaintiff, he should be punished as a wrong doer.

Within which category this case comes it is your province to decide.

It is not pretended that the patented machine of defendant infringes any other combination mentioned in the plaintiff's specification except that which I have stated.

2. Your next inquiry will be, whether the machine used by the defendant for tongueing and grooving is an infringement of the plff's patent, or any combination set forth in his specification. The cutter wheels, described and invented by plaintiff, are evidently but modifications of his planing cylinder, the plane reduced to the chisel. The defendant uses circular saws in connexion with pressure rollers.

It was said in a former case by my colleague, "That the idea of tongueing and grooving by modifications of the circular saw was at least as old as 1793; when it was described by General Bentham, from whom Muir copied his machine many years after. The specifications of the two concur in describing a thick revolving saw or cutter, to make the groove, and two wheel saws set at right angles with each other, on each side of the plank, making four in all, to cut the rebates of the tongue. The machine of Woodworth is an improvement on these, by substituting a single firm cutting wheel, for the four circular tongueing saws, and combining this with the equally firm grooving cutter on the other edge of the plank, to reduce it to an exactly equal width throughout."

The plaintiff cannot now claim that the use of circular saws is an invasion of their patent, as it is admitted that they were applied to this purpose long before their patent; and I do not understand that they make that allegation now, but that the defendant has so fashioned his grooving saw as to be, in fact, the cutter wheel or revolving chisel used by them.

The second combination claimed by pl'ff as constituting the peculiarity or principle of his invention, is "The combination of the rotating planes with the cutter wheels for tongueing and grooving, for the purpose of planing, tongueing, and grooving boards, &c., at one operation, as described." It is not pretended that the defendant's machines infringe this claim.

His third claim is for "the combination of tongueing and grooving cutter wheels for tongueing and grooving boards at one operation, as described."

And his fourth, "the combination of either the tongueing or the grooving cutter wheel, for tongueing and grooving boards, &c., with the pressure rollers, as described."

These claims are too plain to need remark or construction. It does not claim circular saws or any combination with them. But if the defendant, under pretence of using saws for grooves, or, in fact, using the grooving cutter wheel, described by the plaintiff, in conjunction with pressure rollers, then he has infringed his patent, you will say.

It is not the intention of the court either to express any opinion on the facts of this case, or to collate the evidence or arguments of counsel.

You have had the testimony and opinions of experts; but from actual examination of the machines themselves; from hearing the testimony of skilful mechanics; the arguments of able and learned counsel; and being instructed in the law by the court, you have greater opportunities of arriving at a correct judgment than any other persons could have.

In answer to the points proposed by plaintiff's counsel.

1st and 2d, are answered in the affirmative, as being in conformity with instructions more fully given to the jury.

3d. The third is refused. The conclusion stated in it is entirely at variance with the premises stated. The plaintiff's patent being for a combination, it is no infringement to use one of the parts; pressure, by rollers or any other device, is as open to the defendant to use, and all the rest of the world, as it is to the plaintiff. Unless the defendant has used pressure rollers or other equivalent in conjunction with the cutters, cylinders, or chisels, substantially as described in plaintiff's specification, he has not infringed it.

4th. Instructions given as prayed for.

5th. Refused.

The instruction prayed by def't's counsel is given as stated.

There can be no doubt that W. Woodworth has conferred a great benefit on the public by his invention, and his heirs and assignees should be protected against all infringement of the rights secured to them by the law of the land.

But the defendant has an equal right to invent machines for the same purpose, even if his competition may injure the plaintiff. He may evade the plaintiff's patent, if he can do so without invading his rights. Whether he has succeeded or not, you will judge.

The complainant's solicitors pray the court to charge the jury as respects their finding on the issue in this cause:

1. That what is claimed as new by the patentee, is intelligibly and accurately set forth, in plain and unambiguous words, in the specification of the patent of 1845.

2. That if the jury believe, from the evidence, that the substance of Woodworth's invention is incorporated in the structure and operation of the defendant's machine, then their verdict must be for the complainant, and the jury must, on the present occasion, look not simply whether in form and circumstances—which may be more or less immaterial—that which has been done by the defendant varies from the specification of the patent of 1845; but whether in reality, in substance and effect, the defendant has availed himself of the patentee's invention in order to the planing, tongueing, and grooving of a board, &c., or either.

3. That the patent of 1845 is for no particular means, or tools, separately, to accomplish the desired object, but for a combination of means and tools to that end; that one of the means forming a part of the combination is to hold the board down while being cut, for which the patentee says that the pressure rollers or any analogous device may be used; and if the jury believe that the same result—the holding down of the boards—is obtained by the bent gauges of the defendant, their verdict must be for the complainant, even though the defendant's mode of holding down the boards accomplished some other advantage beyond the effect or purpose accomplished by the patentee, which might be a patentable subject as an improvement upon the former invention.

4. That if the jury believe, from the evidence, that cutter wheels are used by the defendant, for tongueing and grooving, or either, the boards to be planed by the planing machine, in combination with pressure rollers, their verdict must be for the complainant, even though the machine for tongueing and grooving may be in fact disconnected from the machine for planing, and forming no part of the construction thereof.

5. That, as regards the tongueing and grooving of a board, or as patented by the patent of 1845, his invention consists of a combination of cutter wheels with pressure rollers, as described in his specification, the effect of the pressure rollers in the operation being to keep the boards

steady, and to prevent the cutters from drawing them to the centre of the cutter wheels; and if the jury believe from the evidence that the defendant, in his machine, uses pressure rollers for the same purpose, in combination with the tools used by him for forming the tongue and groove, and that they are essential in his machine to the result when produced, and that the same result, substantially, is produced in the machines of the defendant, that is described in the patent of 1845, by the use of the tools employed by him in combination with said rollers—then the verdict must be for the plaintiff, even though the jury believe that the tools used by the defendant are what are ordinarily termed saws, separately or in combination; such saws, in this view of the case, being mechanical equivalents or analogous devices to the cutter wheels described in the patent of 1845.

WILSON }
vs. }
BARNUM. }

The instruction of the court is prayed to the following point by the defendant.—3d McLean, 453.

The proof of infringement devolves on the plaintiff. He alleges that the defendant has infringed his rights, and to obtain a verdict he must show it. Doubts under this head will incline the jury favorably to the defendant, as he is not to be deprived of a right which is common to every citizen, unless it shall clearly appear that his machine is substantially like the one claimed by Woodworth.

And thereupon, afterwards, to wit, on the thirtieth day of October aforesaid, the jurors aforesaid come into court (the counsel for the parties being present) and state that they are unable to agree; whereupon they are discharged by the court without a verdict, no objections being made by either party.

Afterwards, to wit, on the following day, the defendant aforesaid, by his solicitors aforesaid, presents his affidavit, which is filed, and is in the words and of the tenor following, to wit:

Affidavit and prayer of the defendant.

Daniel Barnum, being duly sworn, saith: That he is the patentee of the improved planing machine complained of in the bill; that in the month of March last he commenced the business of planing, &c., boards in this county, and was actively engaged therein, profitably to himself and to his customers, until served with the injunction in this cause; that when he so commenced said business the plaintiff charged $6 per thousand feet for planing, tongueing, and grooving boards; this deponent charged $4 per thousand feet. The plaintiff continued to charge as aforesaid until after said injunction, when he reduced his price to $5 per thousand feet for quantities over 5000 feet. It is apparent from the above statement of facts, that the public have been paying $20. at least, in every hundred dollars, over and above the prices charged by the deponent, and are likely to be subjected to said prices until the injunction shall be removed.

Deponent further saith, that the public are further interested in his enjoyment of his right, secured to him by the letters patent granted to him, to make, use, and vend his said machine, inasmuch as he is informed, and verily believes, that the owner of the Woodworth patent demands for a license under his extended term, commencing in this year, the price or rate of one-fourth part of the gross receipts of every licensed machine; one-fourth to be added to the price now paid by the public for his benefit, with the restriction upon all licenses not to plane any boards to go out of their respective districts under the penalty of forfeiture.

This defendant further saith, that he considers the bond given in this cause as insufficient to protect his own individual rights in case of any further delay in revoking said injunction; and that it was given in view of a trial and verdict at the present sessions of the court; that in all districts of the United States where planing is required, he has a right and an opportunity to vend licenses for the use of said machine, but that his hands have been tied by said process, and that if said process shall be continued until the plaintiff shall exhaust all the accidents and delay of litigation, he will be defeated of his rights under his said letters patent, until so remote a period that they will be fruitless, and he will be ruined.

The defendant further saith, that many applications have been made to him to obtain licenses under his said patent, and that he firmly believes he will be able to vend the same in various sections of the country, (as he could have done in many instances heretofore, if he had not been restrained by said process,) and thus realize the compensation to which he is entitled under said patent, to an amount exceeding the amount of said bond, if permitted by the revocation of said injunction; and, also, that he will be able to realize profits, and accommodate the public as before, from the use of his machines in this county.

This deponent further saith, that by reason of the disagreement of the jury his legal rights and just expectations in this cause will be defeated, unless this honorable court will interpose in his behalf by such proper measures for his relief as may seem meet to the court, and consistent with equity. And he most respectfully suggests and prays, that the true intent and spirit of the order of the court in this cause may be carried out, by calling another jury from the present panel to try the issues ordered to be tried at this session; in which event he will instruct his counsel to do all in their power to shorten the duration of the trial.

This defendant further saith, that, upon the argument of the motion for an injunction, it was admitted by the learned counsel for the complainant, that if the question was doubtful an injunction ought not to be granted; and he is advised by his counsel that, in that view of the case alone, the injunction ought at this time to be dissolved; and he is further advised, and respectfully prays, that, under the rules of law laid down by this honorable court in their charge to the jury in this cause, the said injunction may be now revoked.

DANIEL BARNUM.

Sworn and subscribed before me, this 31st day of October, 1849.

GEORGE PLITT, *U. S. Com'r.*

Afterwards, to wit, on the thirteenth day of November, A. D. 1849, the following agreement is presented and filed, to wit:

Agreement for hearing before Supreme Court of the United States.

It is hereby agreed that, by and with the consent of the court, the order for a feigned issue be set aside, and that the cause be considered as brought to a final hearing on the pleadings and the proofs which have been taken herein, as well as on the proofs and evidence which were put in on the trial of the issue before the jury; which last named proofs and evidence shall, for the purpose of said final hearing, be considered as proofs and evidence in the cause; and that the cause shall be speeded to a hearing upon printed arguments before the Supreme Court of the United States, so that the same may be reached by the first day of January, 1850.

Nov. 13, 1849. ST. GEORGE T. CAMPBELL,
For complainant.
W. W. HUBBELL,
For defendant.

Statement of facts and point of division of Judges.

UNITED STATES OF AMERICA,
Eastern district of Pennsylvania.

At a circuit court of the United States, begun and held at the city of Philadelphia, for the eastern district of Pennsylvania, on the 13th day of November, in the year of our Lord one thousand eight hundred and forty-nine.

Present, the honorable Robert C. Grier, and the honorable John K. Kane.

JACOB P. WILSON
vs.
DANIEL BARNUM.

Statement of facts.

This was a suit in equity. The bill was filed April 5th, 1849, by the plaintiff, as assignee of letters patent issued to William Woodworth. After due notice, a motion was made for a special injunction, which was fully heard before his honor, John K. Kane, at a regular circuit court, on the 21, 22, 23, 24, and 25th days of May, A. D. 1849, his honor, Judge Grier, being absent. The defendant resisted the motion, and filed affidavits on his part, when, after a full hearing of the parties and arguments of counsel, on the first day of June, 1849, a special injunction was granted, a copy of which is annexed to this statement. Afterwards, on the 4th day of June, 1849, the defendant filed an answer, setting up the fact of his having a patent for his machine, and denying all similarity between it and that of the plaintiff; which same defence had been previously set up by the said affidavits, on the hearing of the motion for the injunction. Afterwards, on the 29th day of June, 1849, a motion was made by the defendant to dissolve the injunction, which motion was duly argued on the bill and affidavits on the part of the plaintiff, and on the answer and affidavits on the part of the defendant; and on the first day of August, 1849, an order was made in the cause directing an issue to be tried by a jury, for the purpose of ascertaining whether the machines of the defendant were or were not infringements of the machine of the plaintiff, and ordering the injunction to stand, on the plaintiff giving security to the defendant in the sum of ten thousand dollars, which was done.

The issue came on to be tried by a jury on the 17th day of October, 1849, and after a protracted trial, the jury was discharged, not being able to agree.

At this present term of the court, both of the Judges being present, a motion was made by the defendant to dissolve the injunction, and arguments of counsel were heard thereon. Thereupon, without any decision being had on said motion, and upon an agreement of the parties, with the consent and by the direction of the court, this cause was brought to a final hearing on the pleadings and the proofs which had been taken herein, as well as on the proofs and evidence which were put in on the trial of the issue before the jury, and which last named proofs and evidence were, for the purpose of said final hearing, considered as proofs in this cause.

The pleadings were a bill, an answer, and a replication, copies of which are hereunto annexed, and a copy of all the proofs and evidence used on said final hearing is also hereunto annexed.

On said final hearing, it appeared and was determined by the court as matter of fact—

I. That letters patent of the United States were issued to William Woodworth, on the 27th day of December, 1828, of the tenor and effect mentioned in the bill.

II. That William Woodworth died intestate, on the 9th day of February, 1839, in the city of New York, and that William W. Woodworth, his son, and one of his heirs at law, was thereupon duly appointed his administrator by the surrogate of the city and county of New York.

III. That on the 16th day of November, 1842, an extension of the said letters patent for seven years from the 27th day of December, 1842, was duly granted by the United States, under the 18th section of the Patent act of July 4, 1836, to the said William W. Woodworth, as administrator as aforesaid.

IV. That by an act of Congress of the United States, passed February 26th, 1845, the said letters patent were further extended to the said William W. Woodworth, as administrator as aforesaid, for seven years from the 29th day of December, 1849.

V. That on the 8th day of July, 1845, the said letters patent were surrendered for a defective specification, and renewed letters patent were thereupon issued on the same day, on an amended specification, to the said William W. Woodworth, as administrator as aforesaid; which renewed letters patent were of the tenor and effect set forth in the bill. An authenticated copy of the said renewed letters patent of July 8, 1845, and of the specification and drawings thereto, and an authenticated copy of the said original letters patent of December 27th, 1828, and of the specification and drawings thereto, were produced on the hearing, and may be produced on argument, before the Supreme Court of the United States.

VI. That the exclusive right of the said renewed letters patent of July 8, 1845, for the district of Southwark, in the county of Philadelphia, and eastern district of Pennsylvania, was vested in the plaintiff.

VII. That the defendant had erected, within the said district of Southwark, and used and operated therein, since the said exclusive right became vested in the plaintiff, and before the filing of the bill, a machine for tongueing and grooving boards and plank, and also a machine for planing boards and plank. The machine for tongueing and grooving boards and plank was constructed as stated in the evidence. (A model thereof was produced on the hearing by the plaintiff, and the machine itself was produced on the hearing by the defendant. The same are certified by the clerk of the court, and may be used on argument before the Supreme Court of the United States.) The machine for planing boards and plank was constructed as shown by a model produced on the hearing by the plaintiff, and by the machine itself on the hearing by the defendant. (The same are certified by the clerk of the court, and may be used on argument before [the] Supreme Court of the United States.)

VIII. That letters patent were issued to the defendant on the 13th day of March, 1849, which are referred to in, and a copy of which is annexed to, his answer herein.

On the final hearing, the following question occurred, to wit:

Whether, according to the true construction of the Woodworth patent, as amended, the machines made or used by the defendant, at the time of filing the bill, or either of them, singly, do or do not, infringe the said amended letters patent.

On which question the opinion of the Judges were opposed.

Whereupon, on a motion by William H. Seward and St. George Tucker Campbell, his counsel, that the point on which the disagreement hath happened may, during the term, be stated, under the seal of the court, to the Supreme Court to be finally decided.

R. C. GRIER.
J. K. KANE.

United States of America,
Eastern district of Pennsylvania, ss:

I certify the foregoing to be a true and faithful copy of the record and proceedings of the circuit court of the United States, in and for the eastern district of Pennsylvania, in the third circuit, in a certain suit in equity therein lately depending, between Jacob P. Wilson, complainant, and Daniel Barnum, defendant.

In testimony whereof I have hereunto subscribed my name and affixed the seal of the said circuit court, at Philadelphia, this [L. S.] twenty-seventh day of November, A. D. 1849, and in the seventy-fourth year of the independence of the said United States.

GEORGE PLITT,
Clerk of Circuit Court.